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# Business Cycles

*BY D. HAMBERG*

UNIVERSITY OF DELAWARE

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NEW YORK

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*First Printing*

*To Sylvia*



## **PREFACE**

At its inception, this book may be said to have had four main objectives. First, it was to be a book whose content would be focused on the subject of business cycle theory. As is usually the case, this followed the predilections of the author and the manner in which he is accustomed to conduct his course in business cycles. With but one important exception, the existing textbooks on the subject have leaned too much in the direction of business cycle history and or business cycle public policy. Thus, in response to a self-felt need, and the expressed desires of others who teach their courses with emphasis on cycle theory, this book was begun and completed.

The second aim was to write a book which would be rigorous in its analysis of the main theories and tools which have been advanced to explain cyclical phenomena, but which would not carry this rigor into such great detail as to become overwhelming for the undergraduate upperclassman. This, of course, is quite a task. From the point of view of the undergraduate, the objectives of rigor and lucidity are not always reconcilable. Hence one is constantly torn between the desire to attain theoretical elegance and the necessity of keeping the discussion at the level of the average undergraduate. The end results do not always succeed in satisfying everyone. But it is hoped that the intermediate position taken throughout this volume will come sufficiently close to being a happy compromise.

The third objective of this volume was the creation of a common language and a common tool of analysis into which all the various theories might be transposed, and which would provide a general framework into which would fit what brief attempts were made at

analysis of actual business cycles. Fortunately, such a tool existed. This tool was the aggregative terminology that has grown up out of the analytical framework provided by J. M. Keynes. The usage of these tools has become sufficiently widespread to indicate that they are "pure" tools, that is, tools which are completely neutral with respect to subject matter under discussion and examination. As such, they were a "natural" for this third objective. Thus, for example, we have taken the Austrian overinvestment theories, and instead of describing them in the traditional Wicksellian terminology of natural (or equilibrium) rates of interest *versus* market rates of interest, we have described them in the terminology dealing with investment which is developed in one of the early chapters of the book, *viz.*, the marginal efficiency of capital and the rate of interest. The concept of the marginal efficiency of capital is sufficiently akin to the concept of the natural rate of interest (if there is any difference at all) to make it possible to reap all the advantages of clarity without making any sacrifices in the original meaning of the Austrian theories. Such an achievement strikes the present writer as important. Too often has the average undergraduate become confused by endless terminological difficulties. All too frequently does the student gain the impression that there is an endless diversity of theories, when in actual fact, most theories can be fitted into the broad categories of either overinvestment or underconsumption. A single terminology, then, has the distinct advantage of avoiding this difficulty. The benefits of this approach have already demonstrated themselves amply in the classroom of the present writer.

While the main emphasis of the present work is on business cycle theory, analysis of some actual business cycles has not been excluded, nor has the discussion of public policy been omitted entirely. Even in their relatively minor roles it was felt that both of these discussions should fit into the basic framework of national income analysis developed in the first part of the book. All developments, both in the description of the cycles from 1919 to 1949 and in the analysis of the role of monetary and fiscal policy with respect to stabilization measures, have been discussed basically within the framework of the fundamental determinants of national income, namely, the investment function and the consumption function.

It is assumed that the student using this book will be familiar with the subject matter of money and banking, especially bank credit and its regulation by central banking authorities. Outside of some further rudimentary economics which the student will have acquired in his introductory courses, very little else is left to the reader's imagination or past experience. Occasionally, when we have found it necessary to discuss something on a slightly higher-than-undergraduate plane, we have attempted to confine the discussion to footnotes as much as possible.

It is impossible for the author here to list by name all of those to whom he is indebted. However, he wishes to express a special note of gratitude to Professor W. Halder Fisher, of the University of Delaware, who was good enough to engage the writer in many long and fruitful discussions while the present work was in progress and who gave up much valuable time in order to provide editorial assistance. Professor Fisher was kind enough to read and comment upon some of the earlier chapters of the book (although, in fairness to him, it should be noted that his advice was not always heeded). In addition, he lent invaluable assistance in those portions of Chapter I dealing with certain statistical methods of studying business cycles.

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Perhaps above all, much more than the usual debt of gratitude must be expressed to my wife, Sylvia, to whom the book is dedicated. Far from sitting idly by and permitting me to write this book, she worked with me during those long tortuous evenings, helping me with bits of research, editing, typing, drawing all the graphs, and attending to all those necessary but dull details that help to bring a book together.

D. H.





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**PART I**

***INTRODUCTORY SECTION***



## CHAPTER 1

### *STATISTICAL ASPECTS OF THE BUSINESS CYCLE*

There are several typical sequences which have been observed in the behavior of various series of values, such as national income, industrial outputs, and the like. These patterns of "time-series movements" may be observed and even measured by means of the proper statistical techniques. Among the most important movements are: (1) secular, or long-run, trend; (2) Kondratieff long waves; (3) building, or construction, cycles; (4) major business cycles, also called "business cycles proper"; (5) minor business cycles, also called "interrecessional waves"; and (6) seasonal variations. The present chapter is devoted to a discussion of these diverse phenomena, with a view to enabling the reader to gain some insight into their nature and their interrelationships with each other. An appendix is attached to this chapter, which briefly acquaints the interested reader with statistical and mathematical methods employed in the empirical study of business cycles [number (4) above].

#### **THE NATURE OF TIME-SERIES MOVEMENTS**

If we were to draw a simple line graph of some variable (say, a nation's income) over a fairly long period of time, and if the observations were plotted at intervals of one year, some part of this graph probably would look like Figure 1. The data shown in this and following figures are hypothetical. In this figure all the above mentioned time-series movements, except seasonal variations, are represented. Suppose we examine them separately.

### *Secular Trend*

The long run tendency for any economic or social variable to rise, to remain relatively constant, or to decline is called the *trend*. The trend is the basic, underlying movement in any given series.

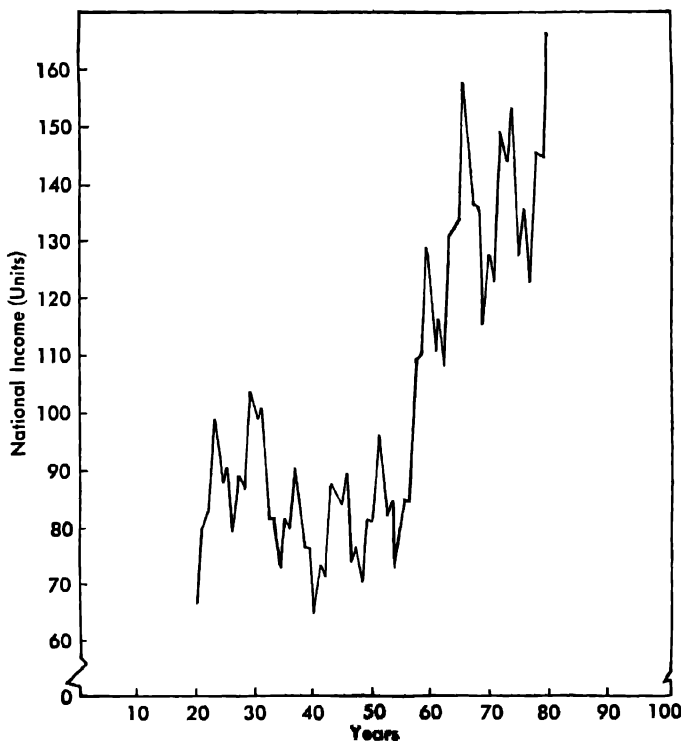


**Figure 1. Hypothetical Time Series of National Income**  
(annual data)

This movement is usually taken to be continuous, smooth, and irreversible (by which we mean that it does not assume a wave-like appearance). The simplest pattern of trend is linear, that is, in the form of a straight line, as may be seen in Figure 2.

Since the basic forces which bring about the trend movements

are the dynamic factors of growth or decline, and since these forces are usually well hidden under the surface pattern of day-to-day developments, it is extremely difficult either to isolate or to evaluate the main trend influences. However, we do know that some of



*Figure 2. Linear Trends*

them either consist of or are strongly affected by population growth, the accumulation of capital, geographical discoveries, the development of new markets and new sources of raw materials, technological progress, and the like.<sup>1</sup>

In addition to the linear trends mentioned above, we may have trends which display simple curvilinear forms like those in Figure 3.



*Figure 3. Curvilinear Trends*

It will be noted that, in the above examples, there has been a pre-occupation with rising trends or with stable ones. But the reader is warned that declining trends, although less familiar to us (because of the generally dynamic nature of modern Western civilization), are ultimately just as possible. In progressive economies, the aggregate trend will always be upward, but the same absolute

<sup>1</sup> It might be wise to give examples of what we mean by these trend influences. The generally rising trend which has characterized the past two centuries of Western Europe, especially in terms of national outputs and incomes, in sharp contrast to the constancy displayed by similar indicators in China, has been ascribed to the cumulative consequences of the industrial revolution. Prior to the eighteenth century, there was little growth in production, especially in per capita terms. This last was particularly apparent in the trend of agricultural output. Generally speaking, there is evidence that agricultural yields per acre and per capita were amazingly stable from the dawn of written history until well within the modern era—a period of more than 2,000 years.

amount of growth per year (or the same rate of growth per year) need not characterize the entire course of their development. In fact, it would be rather unusual to find a real situation in which the trend forces appeared to be completely regular over very long periods. As economies mature and approach the theoretical characteristics of the Stationary State, their aggregate trends tend to be more and more nearly asymptotic (that is, display a strong tendency to level off). Furthermore, such a stationary trend might, at long last, be replaced by another dynamic (upward) one, or even by one of decline.<sup>2</sup> Very similar situations will be found in the behavior of specific industries and of specific firms in any given industry. For example, all else remaining equal, an increase in population would be accompanied by an increase in the output of the main form of transportation, say, buggies. But if we recognize the possibilities of technological progress, other behaviors may result. Thus, even though the population increases rapidly, the introduction and popularization of automobiles as a preferred substitute might alter profoundly the "normal rate" of growth of the buggy industry. In fact, historically the rate of growth in buggy output was not merely reduced in the United States, but actually became negative. Thus, one trend factor overcame and more than offset the influence of another. In this case, the downward trend which came to characterize the buggy industry was (from the point of view of the whole society) a very desirable indication of technological progress, and not a symptom of decadence.

In sharp contrast with the above example, a long-run (and gradual) decline in the *total* output and consumption of a society would be taken, *ceteris paribus*, as an indication of economic decadence and retrogression. But if the numbers of the population were also falling (at a faster proportionate rate), such a conclusion

<sup>2</sup> The reader might interpose at this time—and with some right—the fact that a trend which is first rising, then level, and finally declining, looks suspiciously like a wave motion to him. Superficially, this is true, but there is a further fact that should be taken into consideration. By definition, a wavelike motion is one which may be expected to repeat itself with reasonable regularity as to period and amplitude. This repetitiveness is **not** displayed by the movements herein spoken of as trends. In any trend **series** which does rise, level off, and decline, this **pattern** appears to occur only **once**. This has been especially apparent in the life cycle of a given business or industry.

would be unwarranted. For this reason, the *per capita* rather than the *total* trends in production and consumption might be taken as the more valid indicators of economic growth or decline, especially if consideration is being given to economic welfare.

The statistical determination of trend requires that the investigator decide (often with complete subjectivity) the purpose for which the trend will be used and the shape of the trend line. Essentially, there are two broad categories into which the object of trend-isolation may fall. Either the trend itself is the main thing desired (usually for purposes related to the forecasting of future behavior or relationships), or the trend is needed as an expression of the underlying (normal) tendency of a particular series of data during a given period of time. If the purpose to be served by the trend-isolation falls within the first class, it is essential that the trend line, itself, be completely logical. For instance, if the trend is one of population growth or decline, an extension of the trend line at either end should not result in negative values nor in values which become infinitely large. Logically, S-shaped curves with finite upper and lower limits (such as the Gompertz curve or the Pearl-Reed Logistic curve) would bear a much more rational relationship with our inductive concepts of population behavior than would either a straight line or a paraboloid. If, on the other hand, we were interested in determining the average annual rate of technological progress, our concept of trend would probably be linear. The straight line fits well with the usually posited 3 per cent annual rate of technological progress.

If the purpose to be served by our trend line falls into the second broad category, that is, if the trend line is to serve merely as a starting point for the measurement of deviations from normal, then the precise shape of the trend is of much less significance. It is probably sufficient that the trend lines should be drawn so that the portions of cycles that lie above it more or less balance those that lie beneath it. It is in this second sense that we are particularly interested in trend in connection with the analysis of business-cycle movements.<sup>3</sup> The analyst of business cycles is pri-

<sup>3</sup> We should add, at this point, that the trend, in this particular connection, is not always the secular trend, which is being discussed here, but rather is



marily concerned with the determination of trend in order that he may remove its influences, in part or *in toto*, from the series in which he desires to isolate cycle movements.

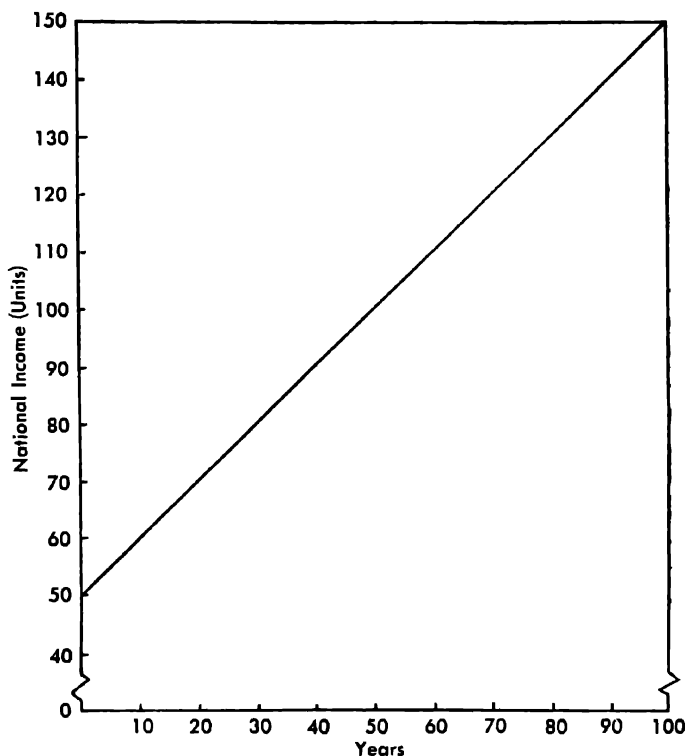


Figure 4. Secular Trend

Aside from all the above-mentioned considerations, a further reason for the significance of secular trend to business-cycle analysis lies in its possible influence upon the amplitude and duration of the major cycle. If the trend is a rising one, cycle upswings may be

-----  
*statistical* trend. This latter term indicates trend which is not pure, but is mixed with other time-series movements which cannot be isolated because of the shortness of the time period under study. This will become clearer at a later point in the present chapter.

stronger and more enduring, while downswings will be weaker and shorter in duration. If the trend is a falling one, the relationship may be reversed.<sup>4</sup>

Figure 4 shows the *secular* trend of the hypothetical series of Figure 1. For the sake of simplicity, it appears in the form of a straight line rising at the rate of one national income unit per year.

### *Kondratieff Long Waves*<sup>5</sup>

The Kondratieff long wave is a slow wavelike fluctuation which is completed (that is, goes through a complete movement from trough to trough, or from peak to peak) in a period of 40 to 70 years. There is still considerable controversy about the existence of this movement as a separate type, and it may never be completely cleared up, because of the lack of statistical series of sufficient length to embrace several of these long waves. Nevertheless, since there seems to be no reason to doubt the presence of some sort of slow waves like the Kondratieffs, and since most students of economics at least tentatively accept them, we will discuss them here. The Kondratieff is always a movement *around* the trend, as shown in Figure 5*b*. In Figure 5*a*, we show it without the trend, or as it would appear in case the trend were perfectly horizontal.

The characteristics of the long waves are, in a sense, unique. Their upswings are always indicated by rising tendencies in interest rates and prices. The opposite is true of the declining phases: they are made evident by falling interest rates and prices. The Kondratieffs do not seem to produce absolute declines in output during the long depressions, for the levels of per capita output and real

<sup>4</sup> Generally speaking, the influence of the trend on the movements within the cycle will depend on the directions and relative slopes of the trend and cycle components of the series. Also, the reader should note the use of the word "may" in this paragraph. As will be shown, other movements over time may be thought of as being interposed between the trend and the cycle in any given series. These other movements, rather than the trend, may be more influential in determining the various intracyclical relationships mentioned above.

<sup>5</sup> Named for the discoverer, Nikolai D. Kondratieff, the Russian econometrician, who first published his hypothesis in 1926. Since that time, numerous other investigators have arrived independently at much the same conclusions as regards the existence of these long waves. Cf. Kondratieff, "The Long Waves in Economic Life," *The Review of Economic Statistics*, XVII (November, 1935), pp. 105-115.

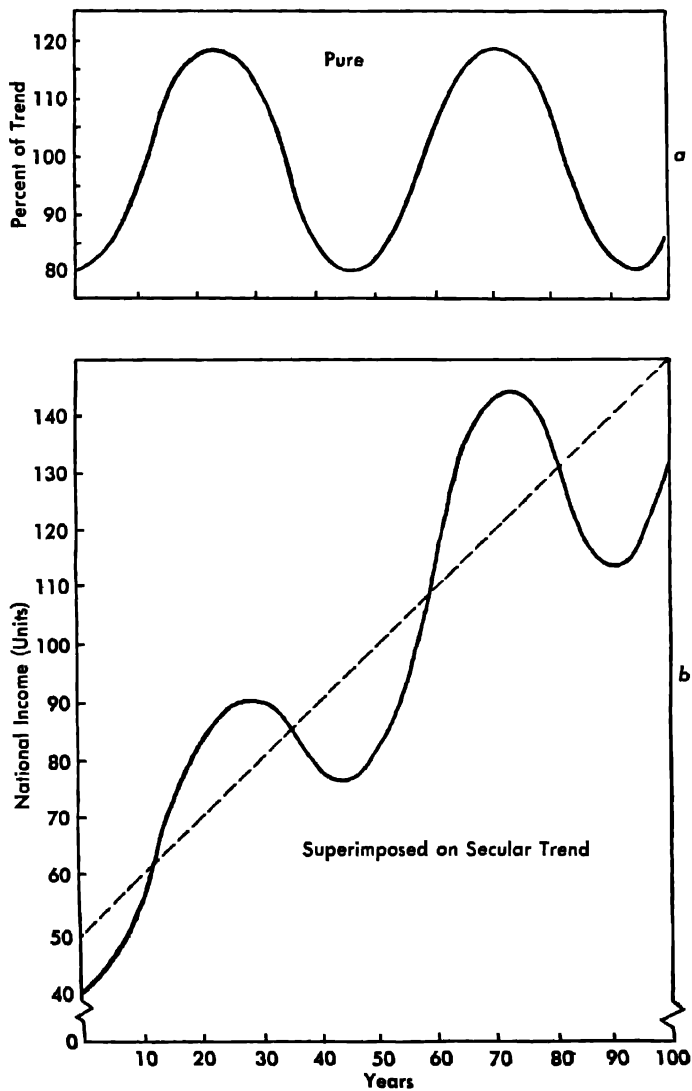


**Figure 5. Kondratieff Long Waves**

income continue their upward movements. However, the downswings of the long waves do reveal a marked relative degree of continuous unemployment, so that the expansions of the major business cycle consistently fail to reach full employment before their termination. The apparent contradiction between the presence of unemployment and the continued rise of per capita output during Kondratieff contractions will be resolved when we understand the probable causes of the long waves, themselves. Finally, it has been noticed that the periods embracing the Kondratieff turning points are usually characterized by heightened social unrest, major wars, or revolutions.

It is very difficult to suggest the true causes of the Kondratieffs, because we have so few upon which to base our analyses. It is generally agreed that statistical series now known allow the isolation and measurement of not more than three of these long waves. Some students explain them in terms of technological change, some in terms of wars and colonial expansions, and others in terms of the flow of gold into the economies of the world.<sup>6</sup> Probably the most convincing explanation is that offered by Professor Schumpeter, among others. According to Schumpeter, the three known long waves have coincided quite closely with the three tremendous surges of technological progress which have characterized the last century or more. The first of these emanated from the Industrial Revolution, the nature and significance of which need not be elaborated. The second originated in the great rate of railroad building which marked the period from about 1840 to around 1875. Not only did new industries develop (and old ones expand) in order to supply the needs of the railroads, but the railroads provided the nuclei around which new communities formed, and further expansion of old and new industries was needed to supply them, in turn. Finally, around the turn of the century, the third wave originated in the development and expansion of the electrical and automotive industries, which are contemporary enough in their importance to require no further elaboration.

<sup>6</sup> The reader is referred to Alvin Hansen, *Fiscal Policy and Business Cycles* (New York, W. W. Norton & Company, 1941), pp. 27-41, for one of the best brief surveys of the various explanations which have been offered.

These great eras of invention and innovation do not follow on each other's heels, but rather appear as separated surges. When they do occur, they give rise to the tremendous spurts of capital formation (investment activity) which characterize the Kondratieff long-period upswings. After the passage of a sufficient period of time (about 25 years, on the average) the initial impetus seems to wear off. Thus begins a long-period downswing, characterized by a continuation of technological progress and further investment, but at a significantly lower level. This basic long-period slump in capital formation continues until the appearance of some new innovation of extraordinary economic impact. Herein lies the explanation of the apparent paradox of the Kondratieff, mentioned above: Technological progress never comes to a full stop during the Kondratieff downswing; therefore, per capita output and real income would be expected to continue to rise. However, since investment activity proceeds at a much lower rate, when compared with the upswing, there is a fundamental tendency toward underemployment of both labor and other resources, throughout this phase. For this reason, primarily, the long-wave decline may be truly termed a long period of "hard times."

As has already been implied, the influence of the Kondratieff upon the business cycle is even more pronounced than is that of the secular trend. During the rising phase of the Kondratieff, booms are strong and prolonged, and depressions are short and mild. During the falling phase, recoveries are short and weak, while depressions are long and severe.

In most actual statistical investigations, the period of time covered by the data is so short that it is impossible to separate the secular trend from the Kondratieff. For this reason, the term *statistical trend* (or, at times, *secondary trend*), embracing both secular trend and Kondratieff, is used to denote any underlying tendency (to rise, to fall, or to remain constant) which seems to characterize the period under study.

### ***Building Cycles***

Building cycles constitute the longest wavelike movement which definitely has been isolated in the study of economic time series.

These cycles affect both residential and nonresidential construction and last, on the average, about 18 to 20 years. Although the cycles in the building of various types of structures tend to agree closely with each other in timing, periodicity, and amplitude, there is a considerable range of difference in the durations of various cycles which have been recorded. The shortest building cycle on record lasted about 14 to 16 years, while the longest lasted about 23 years.

It is not difficult to account for the great length of these fluctuations in the intensity of construction activity, nor are the causes hard to discover. In a dynamic society, such as has characterized the past development of the United States, durability of existing structures, the nature of population changes (and their effects on housing demands), the internal nature of the building industry and the methods whereby the supply of construction factors is regulated, and the speculative character of the American real estate market, all combine to reduce the stability of construction activity in a very special way.

About 20 years has been found to be the average life span of most residential and industrial structures. Even though many buildings endure for far longer periods of time, most do not, and few can remain in service for an appreciably longer period without extensive repair and renovation. Much of this need for renovation, especially, derives from the rate of change in consumer concepts of what constitutes a *home* (rather than from the inherent inability of the structure to continue providing housing services). Similarly, periodic modernizations of business structures, particularly those into which the public customarily enters, must be made in order to "keep up with competition," even though the basic structure may still be sound. Finally, the many buildings which do wear out within a period of about 20 years, more or less, must be replaced. Thus, if there is or was any tendency for the creation of new structures to be lumpy (not smoothly spread out) over time, we would expect to find a wave of increased building activity, for the purpose either of replacing or of renewing buildings, every 20 years or thereabouts. Moreover, if for any reason overinvestment in buildings occurs, this same durability factor acts to en-

force relatively long periods of idleness in the construction industry—for disinvestment is practically impossible.<sup>7</sup>

The role of durability in causing the building cycle, while important, is almost completely negative. It makes the long cycle possible, but it does not actually determine the length of any specific cycle. The *active* factors (those which exert positive influence on the length of building cycles) may well be thought of as falling within a single broad category and may be called "lag" factors.

It would be best to consider all the lag factors simultaneously, because their causal influence is circular. However, since this is impossible, we will take up the longest-run factor (that of population growth) first, making a very few simple assumptions concerning the others. In a country which is, as the United States has been up to now (and probably will continue to be until about 1980), characterized by steady population increase, a very important lag factor emerges unless the rate of residential construction is steady and keeps pace with that of the growth of population numbers. We can safely assume that this steadiness of residential construction has never existed. Let us further assume that, for the moment, the demand for housing is oversupplied. Prices will fall in the real estate market, and the rate of home construction will fall off to a very low level. Although there will probably be a slow absorption of the excess housing from year to year, it will not be until the children of the householders and tenants (whose demand was oversupplied, in the first place) have grown up and started their own families that the demand for housing will rise sufficiently above the supply in existence to stimulate another boom period in home construction. This will take about 20 years, on the average. Again, the demand for housing will tend to be oversupplied, and the cycle will tend to repeat itself with a high degree of regularity.

If this factor of population increase were the only lag factor concerned, however, the violence of the building cycle would be much less than it actually is. The cyclical movement which was indicated in the previous paragraph is made far greater by the

<sup>7</sup> Durability is also responsible to a very large degree for the amplitude (as well as the length) of the building cycle. This effect of durability makes itself felt via the so-called "acceleration principle," which will be discussed later in this book.

*internal structure and characteristics of the construction industry, itself, and these internal lag factors affect nonresidential as well as residential construction. The building industry, especially in the United States, has tended to become a very speculative one, characterized by very lax methods of financing new construction. Contractors generally have little difficulty in gaining extensions of credit from the traditional lending agencies (banks, insurance companies, etc.) as well as from the firms which supply the construction industries with materials and supplies. These latter sell on very easy terms in an effort to stimulate business. As a result, large numbers of building contractors are enabled to operate with a minimum of equity capital, almost literally "on a shoestring." Thus, whenever the prospects for profits appear favorable, the construction industries are subjected to an abnormally large influx of new and relatively inexperienced entrepreneurs. It is this large group of "in and out" contractors which is, to an important degree, eventually responsible for the tremendous oversupply of new buildings. Since these periods of excessive investment by the building trades and their consequential severe depressions of building activity tend to repeat themselves within the memory of many men in the industry, it becomes necessary for housing demand to remain high for some time before they trust the market and expand building activity. This initial timidity of the trade tends to accentuate the lag of supply, but more important it tends to increase the danger of eventual oversupply, once these fears of depression are overcome.*

In addition to entrepreneurial timidity, the long depressions of the construction industry tend to create relative shortages of both skilled labor and capable contractors. During the depressed phases of the building cycle, younger workers, especially those newly entered into the labor market, tend to seek employment elsewhere. This means that, as the older workers die off, retire, or move out of the building trades, replacements are not forthcoming. Thus, when the demand for new construction rises, it must be met by a greatly reduced labor force. Considerable time must elapse before new workers can be trained; and this is in addition to the period of high demand necessary to overcome the fears of the contractors (em-



ployers of the skilled labor) themselves. After this labor force is built up, further time will be required to bring about the necessary expansions in the various industries which supply building materials, many members of which were liquidated during the long building depression. The time required to accomplish all this is extended because of competition (for labor and other factors of production) by industries outside the field of construction, especially if the rising phase of the building cycle coincides with boom conditions elsewhere in the economy. While all these delays are taking place, the relentless pressure of population growth further increases the demand for housing and, through it, the inflation of real estate values, the prospective profits of the building industry, the influx of speculative builders, and the eventual oversaturation of the market.

These reciprocal relations are most important. The very same technological factors which tend to bring about or to accentuate the lag of supply behind the needs for new construction contribute to the inflation of rents and prices during the period of unsatisfied demand. This in turn contributes to the speculative overinvestment which seems to be the precursor of every slump in the level of building activity. Moreover, the rather lengthy time period involved in the actual process of building construction makes it inevitable that many projects are still uncompleted when the first signs of oversupply (and depression) appear. Since the abandonment of incomplete projects would probably entail higher losses than their completion, even with a falling market, **there** is a tendency for the supply of finished buildings to continue to rise after the building depression has set in. Thus the crisis in the construction industry is usually accentuated by the continued appearance on the market of newly completed structures (even though at a reduced rate) until well into the downswing of the construction cycle. The losses which are taken on these particular buildings are usually of sufficient size and severity to wipe out many of the profits of the previous boom and to instill a great degree of fear in the construction industry. And, as we have already seen, this fear on the part of the contractors is one of the most important factors causing the ultimate appearance of another boom.

The building cycle, in its pure form, is shown in Figure 6a. In 6b it is shown superimposed on the resultant curve of the secular trend and the Kondratieff. The student is especially invited to notice how it introduces irregularities into what would otherwise be a smooth oscillation. (The solid line of Figure 3b is shown as the broken line in 6b.)

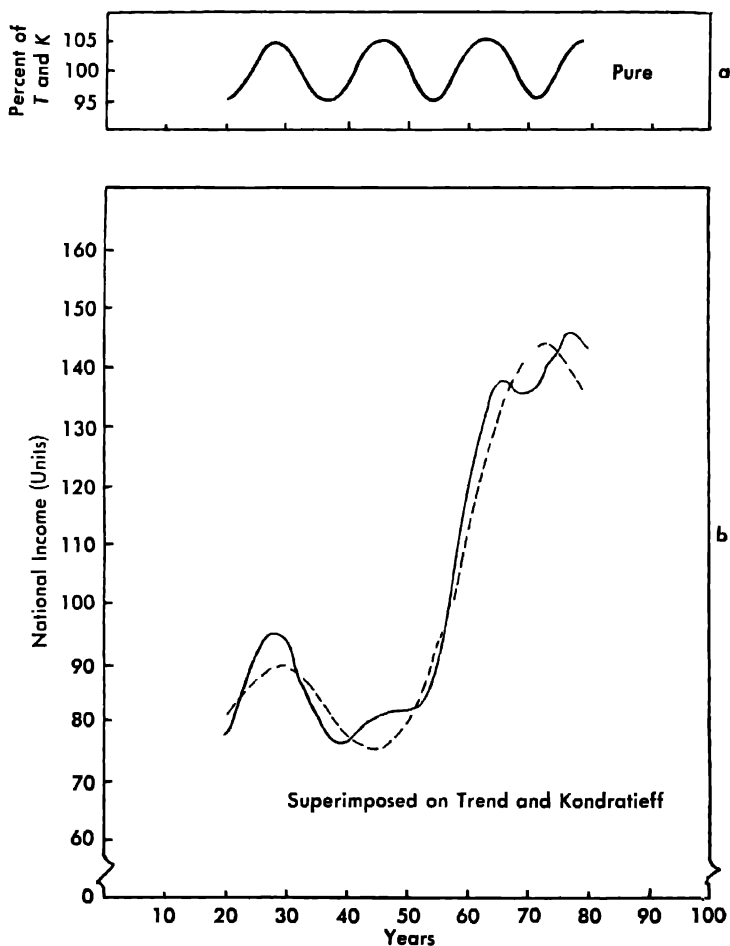


Figure 6. Building Cycles

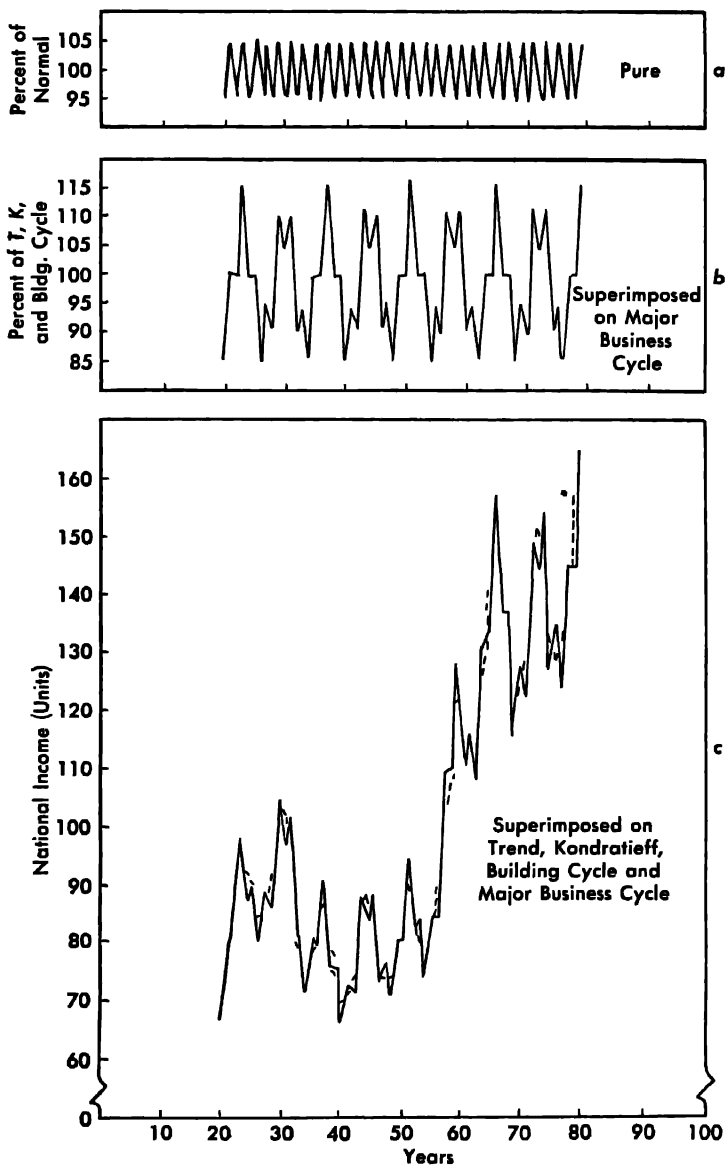


**Figure 8. Minor Business Cycles**

4. All the cycles combined in deriving the line of Figure 1 were constructed with periods which were integral multiples of one year, whereas, in any real situation, the periods would be subject to fractional variation around some mean value.

When we consider carefully the full implications of all these differences between our model and the realities of time series, we may wonder about the validity of assuming cyclical patterns in the first place. This is a justifiable position. There is no *prima facie* evidence of the existence of cyclical movements (in the pure form) in the world of economic reality, nor is there any final authority for our assumptions, whatever they may be, concerning the duration or the amplitude or any such movements, if any exist. In other words, the very concept of periodic variations is an abstraction, or generalization, which the mind of man has made from empirical observations. If these abstractions cannot aid us in explaining our observations, or at least in organizing the knowledge gained therefrom, then they are without validity. But they do furnish this aid, and we therefore use them.

Still, there is a considerable amount of leeway which is open to controversy concerning the natures and lengths of the various cyclical movements, themselves. There is in fact no means whereby we can categorize our observations concerning particular real fluctuations except by the use of arbitrary distinctions. And nowhere is this arbitrariness more apparent than in the literature on business cycles, especially in the distinctions between major and minor cycles. Some authorities, especially the National Bureau of Economic Research, tend to take an extreme position. The business cycle (according to the NBER) is a fluctuation in the level of business activity which requires more than one year to complete (and is not, therefore, a seasonal variation) but is not as long as the construction cycle." Using this definition as the basis of their re-

"Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similar general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles of similar character with amplitudes approximating their own." A. F.

search, the investigators of the NBER have found cycles with durations of every possible length. Professor Haberler, in *Prosperity and Depression*,<sup>10</sup> mentions a 3–12 year range, but gives no explanation. In the present treatment, the range of duration has been stated to be 6–13 years for major cycles and 1½–4 years for minor cycles, both being understood to be merely approximate statements. This position could perhaps be termed an opposite extreme to that of the NBER.

It is not difficult, however, to justify the position taken herein. In the first place, these definitions are not unique with the present text. They have been used before.<sup>11</sup> In the second place, there are differences in the significance to the economy of the longer and shorter cycles: If nothing else, the fact that one group of cycles averages over twice as long as the other is bound to make its influence on the lives of people much greater in degree; actually, however, the longer cycles tend to have a greater amplitude of fluctuation than the shorter ones; further, taking the length and amplitude of fluctuation together gives us a crude but effective measure of the profundity of the maladjustment (or maladjustments) which brought about the fluctuation in the first place; and finally, whenever the short cycle appears to be merely an interruption in the rise or fall of a longer cycle (and most do), it becomes obvious that the forces creating the latter are more deep-seated and more powerful than those creating the former, even though both may result from the same kinds of causes operating through the same economic mechanisms. Thus, we can conclude that there is considerable possibility that our theoretical needs can be better served by using the categories *major* and *minor*, as herein defined, in our examination of business cycles. It is generally felt, by those who utilize these concepts, that the minor cycles are cycles which result primarily from the efforts of businessmen to adjust the sizes of their *inventories* to short-term changes in prospective levels of sales; the major cycles, on the other hand, are generally held to result from adjustments of *fixed* capital outlay,

Burns and W. C. Mitchell, *Measuring Business Cycles* (New York, National Bureau of Economic Research, 1946), p. 3.

<sup>10</sup> (Lake Success and New York, United Nations, 1946), p. 271.

<sup>11</sup> See especially Hansen, *op. cit.*, pp. 16–19.

such as plant, equipment, and the like, to situations which are expected to endure for much longer periods.

The reader should not think, however, that the position taken in the above paragraph either ends controversy or removes the statistical difficulty of separating the long and short cycles. In the mind of the author the matter is still open to controversy, so that these definitions must be used as intended. They end no arguments, nor do they discredit those persons adhering to different concepts; they do not deny the possibility that many major and minor cycles share much of their causation; but they are thought to add precision to the theoretical consideration of the more significant fluctuations in the national income.

### *Seasonal Variation*

If, instead of using annual data, we were to use monthly, quarterly, or weekly data, we would find a further complicating factor introduced by the regular recurrence of seasonal fluctuations. Every year, for example, employment in and sales of retail establishments rise before Easter and again before Christmas, but more at the latter time. The reader probably can supply many other examples of seasonal fluctuations from his own experience. Seasonal patterns recur with great regularity year after year, because they are entrenched in custom and in our reactions to the annual weather cycle. When we take our hypothetical series of annual data and superimpose upon it monthly data expressed at the annual rate (that is, multiplied by 12 to make it comparable with the annual total) in which the seasonal pattern is present, we get the result shown in Figure 9. The reader should note that the scales of this chart differ from those common to the previous six.

The type of series shown in Figure 9*b* is very important to the student of business cycles, since monthly or quarterly data are usually employed. This use of monthly rather than annual series derives from the fact that the previously mentioned movements are not necessarily completed in a period of whole years, but may come to an end at some time during a year. Obviously, the shorter the unit time period used, the more precise are the observations. The student should understand however, in this connection, that

only spurious accuracy usually is gained by the use of weekly or daily data, for reasons which will become clear later on.

### *Erratic Movements*

Even when all the above mentioned time sequences have been accounted for, there often occur additional fluctuations which must

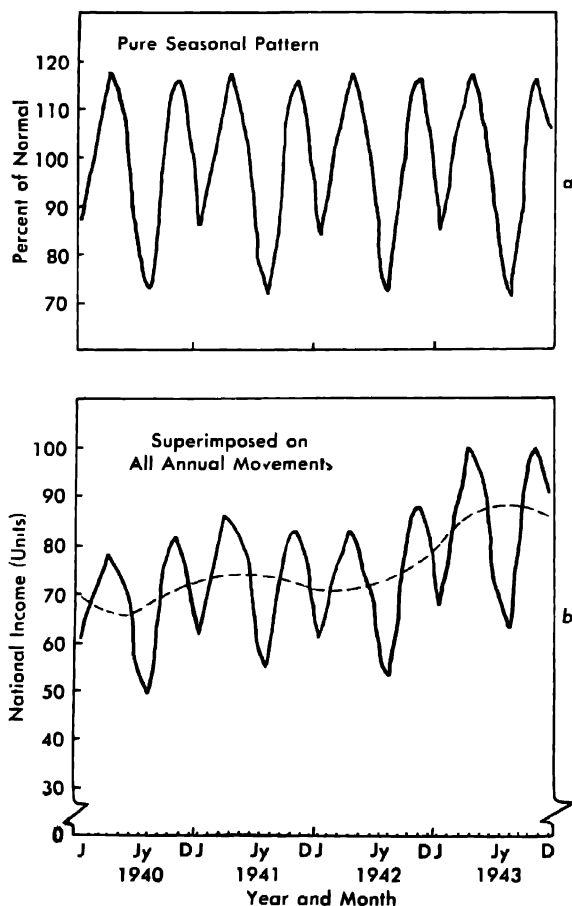


**Figure 2. Hypothetical Time Series Showing Seasonal Variation**  
(monthly data at annual rate)

be explained in other ways. Wars, inventions, natural catastrophes, new geographical discoveries, etc., may (and do) introduce sudden jumps and drops into movements which would otherwise behave more like Figures 7 or 8. These unexpected and unpredictable variations occur without pattern, either as to direction or timing. But their influence, as a moment's consideration will make clear, is usually profound. It is impossible to act as if a given war had not occurred and to treat the postwar period merely as the continuation of prewar patterns of behavior. Wars do occur and, in addition to causing a sudden rise or slump in given series of data, they probably change beyond recognition (and possibly for all time) all the various factors which influence the series. Because of this influence which they may exert, erratic factors often prove of paramount importance, and usually embarrassment, to students of time series. There is no pat method of coping with or correcting for them.



## APPENDIX TO CHAPTER 1

### **STATISTICAL METHODS APPLIED**

### **TO BUSINESS CYCLE ANALYSIS**

The problem faced by any person attempting to make an empirical study of business cycles is to apply a method of analysis to the raw data which will isolate the business cycle from all other time-series movements without eliminating any of the cycle itself. This is more difficult to accomplish than the mere statement implies. In the first place, many of the characteristics which make a given cycle worthy of study may have resulted from trend influences, the phase of the Kondratieff at which the cycle occurs, the relationship between the cycle and the building cycle, or some similar relationship. If these other movements are eliminated, some part of the cycle, itself, goes with them. Similarly, and in the second place, any smoothing of the series which will be inherent in abstracting the cycle will do away with some of the characteristic movement which is actually part of the cycle. Finally, if our determination of trend, Kondratieff, cycle, etc., is objectively mathematical (and, obviously, it would have to be, since subjective determination would not be completely valid from the viewpoint of scientific method), natural irregularities which may be part of our data are slurred over and lost through the very precision which makes our method scientific.

If the reader will keep in mind the above reservations, he will have a background against which to judge which method will be useful. There are five main methods of business-cycle study which, while subject to these reservations, are not invalidated by them. They are: the orthodox, or residual, method; the method of direct

measurement; the application of harmonic analysis; the application of orthogonal polynomials; and the more recently developed econometric method of analysis. Brief summaries of the methodological positions of these five categories, without the precise step-by-step procedures, are set forth below.

### THE ORTHODOX OR RESIDUAL APPROACH

The orthodox approach to the statistical examination of business cycles views the cycle as one of several types of movements which simultaneously influence the raw data. As they are usually taken, these influences are: trend (T), which includes secular trend, Kondratieff, and often the building cycle (this last especially if the time period under study is fairly short); the business cycle (C); the pattern of seasonal variation (S); and irregular or erratic influences (I). It will be noted that the business-cycle influence is not broken into major and minor cyclical forces, but that these are lumped together. According to this approach, the observed values may be thought of as being the simultaneous product of the four sets of influence, that is:

$$\text{raw series} = T \times C \times S \times I$$

The process of isolating the cycle itself then resolves simply into the process of isolating trend and seasonal, expressing each of them as a relative-to-normal (percentage) value, and eliminating them from the series by division:

$$C \times I = \frac{T \times C \times S \times I}{T \times S}$$

The student should notice that the erratic influences cannot be expressed in any formal terms, by definition, and therefore cannot be eliminated objectively from the series. About the only thing which can be done with them is for the investigator to try to keep them in mind and to allow for them in examining the trendless and deseasonalized series for cycles.

In any actual investigation, there are several choices as to the method of expressing and eliminating the trend and the seasonal pattern. The student is referred to any standard text on time-series

analysis for the precise methods which may be considered.<sup>12</sup> Since this is not a book of statistics, any detailed discussion of the methods would be out of place. However, in order that the student will be able to form some idea of the nature of the procedure, it might be well to go further into the matter.

Trend is usually measured by fitting a line (curvilinear or linear) to the raw data by means of the method of least squares. This results in the derivation of a mathematical formula from which we can obtain a value (ordinarily expressed in the same units as the raw series) for the pure trend corresponding to each observed value of the data. This trend value shows what the series would be, year-by-year or month-by-month, if all other influences were absent. Naturally, since all other influences are not absent from the raw data, these latter values lie sometimes above and sometimes below the trend values. If the trend values are now taken to equal 100 per cent (that is, if each observed value is expressed as the percentage of its corresponding trend value), the series is converted from its original units into the so-called trend-relatives. Symbolically this would be:

$$C \times S \times I = (T \times C \times S \times I) / T$$

Another method of trend elimination, and one which does not change the form of the data, consists in assuming that the trend adds a growing plus or minus amount (in original units) to what the series would otherwise be (that is, the trend-free data). If these values are then subtracted from the observed values, the trend-free data will be expressed in the original units.

It is immaterial whether seasonal influences are removed from any given series of data before or after the trend is attacked. Quite often the data are deseasonalized by a method which avoids the necessity of first eliminating trend, or by a method which makes automatic allowance for the effects of trend on the seasonal pattern. In such a case, the order in which trend and seasonal influences are eliminated is left up to the convenience of the investigator.

One of the most common methods of deseasonalizing a raw

<sup>12</sup> See, for example, F. E. Croxton and D. J. Cowden, *Applied General Statistics* (New York, Prentice-Hall, Inc., 1939), Chaps. XIV-XIX.

series is by the use of the 12-month moving average. In brief, this method consists in averaging successive 12-month sequences (for example: first, the January-December average is obtained; then the February-January average; then the March-February average; and so on). Each average contains every month in the year, and only contains each month once. In this way, seasonal influences offset each other, so that the resulting average monthly value is completely deseasonalized. Since, by convention, the average month is centered in the year, it will consist of the last half of the sixth month in the series taken with the first half of the seventh month. Ordinarily, a further manipulation is necessary to center the value in a calendar month, so that interpretation can take place in terms of our normal concepts of time intervals. There is no need, however, to go into this.

Whenever it is desirable that the seasonal pattern of variation be studied, rather than simply eliminated, it is necessary to express the seasonal influences which apply to each month (or week, or quarter) of the year in the form of an index number, or relative, with the average month of the typical year taken as 100 per cent. There are many different methods of doing this. Some have the advantage of simplicity and ease of computation, while others are more accurate in measuring small differences in the seasonal play of forces. Where strong cyclical and irregular influences are felt from month to month, in addition to the seasonal pattern, the investigator may find it advisable to use an index of seasonal variation and the method of deflation (division of each month's raw data by the corresponding seasonal index) rather than the 12-month moving average in order to deseasonalize the raw data. The resulting series is usually referred to as "adjusted for seasonal variation" (or "seasonally adjusted") rather than deseasonalized.

Regardless of the method which is used for the elimination of trend and seasonal influences, the actual examination of the cycle cannot take place before the effects of these two have been removed from the data. If this removal has been complete, the series will now graph in the form of a quite smooth wavelike movement around a horizontal line. Any sudden breaks in the smoothness of the wave will be consequences of irregular or erratic influences. As yet,

there has never been devised a completely satisfactory method for dealing with the irregular forces. Some students of time series attempt to draw the graph through periods of irregular influence in such a way as to ignore them. This presupposes that the erratic force has no lasting effect on the behavior of the variable, but leaves the scene completely. Unfortunately, most erratic forces do not fit this concept, and the investigator has no way of determining which do and which do not, so that many absurdities may be introduced into the cycle pattern even before it is completely isolated. There are other students of time series who attempt to smooth the data and eliminate most irregular deviations by some kind of an elaborate moving average (using as raw data the series after trend and seasonal have been removed). The primary difficulty with this method is that it usually throws the baby out with the bath water, smoothing away cyclical as well as irregular factors.

Assuming that the elimination of trend, seasonal, and irregular influence has been accomplished within bounds of reasonable accuracy, the time series is left in the form of a rather smooth oscillation around the horizontal. If the original data were monthly, it now becomes possible to mark the turning points of the several cycles, and to date them to the nearest month. Next, the amplitudes of fluctuation can be measured by converting the monthly data from their original (or index) units into deviation units. This is done by taking all deviations from the 100 per cent base line (or normal horizontal line) rather than from the base line zero, determining the standard deviation (or, perhaps, the average deviation) of the entire series, and then dividing the standard (or average) deviation into each of the individual deviations. This operation makes possible direct comparison between series, regardless of the original amplitudes of their fluctuations.

The orthodox or ~~residual~~ method of business-cycle study, it will be noticed, studies ~~the~~ cycle entirely from the point of view of time series. In other words, it is the sequence of events in time that furnishes the object of study; cycles are viewed primarily within the framework of their sequential order.

**THE METHOD OF DIRECT MEASUREMENT (NBER)**

Under the direction and guidance of Wesley C. Mitchell, the National Bureau of Economic Research has pioneered in the development of a method of directly measuring various cycle characteristics and combining them (by averaging) into a typical cycle pattern for the series of data under study. This method has much to recommend it to the cycle statistician, for it enables one to grasp certain internal aspects of specific cycles in a manner impossible with any other approach. Nevertheless, in the very attempt to determine the average pattern of a given cycle series, the method eliminates two important things: first, the sequential relationships between successive cycles in a series; and, second, the relative individuality of each individual cycle in the series. It will be wise for us to examine this method in order to understand both its advantages and its weak points, as a method. No attempt will be made herein to criticize the application which the NBER has made of the method nor the conceptual basis (primarily the definition of the business cycle, for which see footnote 9 in Chap. 1) of the NBER use of the method.

The first step in the application of the direct method consists in the selection of a series of raw data (preferably on a monthly basis) and its deseasonalization. This last is usually accomplished by means of a 12-month moving average (or total), centered (without further manipulation) on the seventh month. By this means, the series is cleared of seasonal influences, but left otherwise unchanged. It might be pointed out, in this connection, that there are particular series which the NBER has found could be more effectively adjusted for seasonal by the separate computation of a seasonal index and the method of deflation (discussed briefly in connection with the residual method, above).

In general, the NBER has not attempted to eliminate trend in the manner of the residual method. This decision has resulted from the feeling that while intercycle trend (that is, the fact that successive cycles may be higher or lower than the ones which precede them) should be eliminated, it is to the best interest of cycle study to keep the intracyclical trend (that is, the movement

of the trend rise or fall within the period of any specific cycle) intact in the series from which measurements are to be made. This is accomplished by the measurement of cycle deviations-from-normal from the average intracycle value, rather than from the individual trend values themselves. We shall return to this at a later point.

Before any attempt is made to take direct measurements of cycle characteristics from the data, the series must be broken up into cycle segments, that is, must be divided into as many subseries as there are cycles. Ordinarily, this is done by reference to a listing of dates thought to correspond with the turning points of the business cycles.<sup>1</sup> This allows the series to be subdivided at the turning points (usually the lower) into separate complete cycles, by definition. There are some series of raw data which are found to move contracyclically (that is, to fall when most other series are rising and to rise when most other series are falling). These are usually treated inversely and divided into cycle segments at the upper turning points.

Up to this point the entire series has been handled as a whole; but from this point forward each individual cycle will be treated separately, as shown in Figure 10. The reader will note that the trend relationship between successive pairs of cycles is lost after segmentation, but the trend movement within the individual cycle remains, in 10*b*. The points marked *p* represent the average values for the individual cycle periods, and are taken as the base line values (100 per cent) in computing the cycle values as trend-relatives. This is diagrammed in Figure 10*c*.

Working from the material which is shown schematically in Figure 10*c*, the direct approach continues as a series of measurements taken on each individual cycle and then averaged, measurement by measurement. First the number of months encompassed by the complete cycle is determined; this period is further broken down into the time taken up in the expansion phase and that taken

<sup>1</sup> There is no need to go into the source of this list of reference dates. Obviously, the nature of the list will depend on the precise definition of a cycle which is adopted by the investigator. The NBER has applied its own definition to all the evidence available, using business annals, cycle series isolated by the residual method, the findings of other investigations, and any other evidence which could be found.

up in the contraction phase. Second, the amplitudes of the expansion and the contraction are determined from the cycle values (trend-relatives) in terms of the total upward range of the ex-

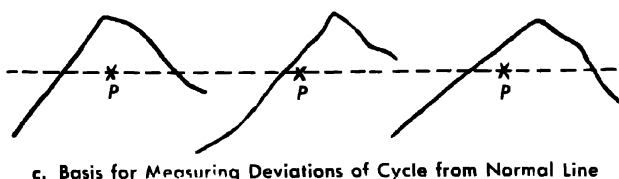
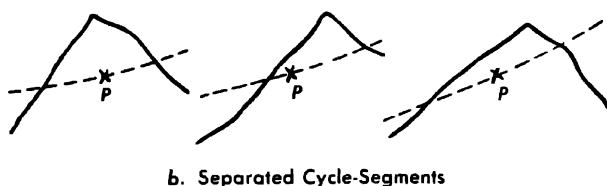
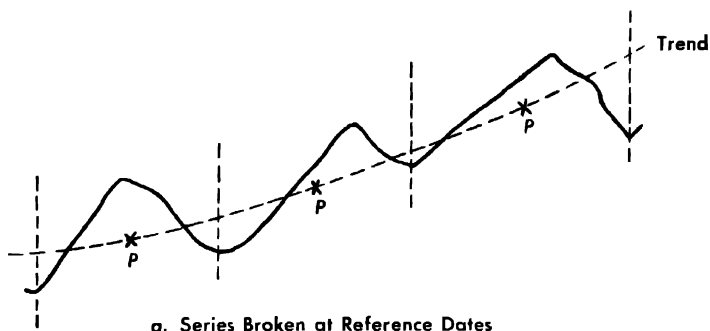


**Figure 10. Direct Method-Handling of Series**

pansion and the total downward range of the contraction. Third, the periods of expansion and contraction are each broken into quarters (of the time, not of the amplitude), and the ranges of expansion per quarter and of contraction per quarter are measured.



Finally, all these characteristics are averaged separately, and the average cycle is synthesized.

The reader should be aware of the fact that the above constitutes a gross oversimplification of the actual method of direct cycle measurement, as practiced by the NBER, but it should suffice to indicate the main differences between this and the residual method. For detailed working procedures, the reader is referred to the publications of the NBER, itself.<sup>14</sup> Obviously, these two approaches attempt to deal with the cycle from quite different points of view, and should, therefore, be supplementary rather than mutually exclusive. Both methods attempt to treat the cycle in a purely statistical fashion, without attempting to abstract any "pure" cycle from the original data (with "pure" taken as meaning smooth, regular, and perfectly periodic). The residual method attacks the cycle as a sequence of recurrent ups-and-downs over time; the direct method attacks the cycle as an average mode of behavior. The former examines the relationships which develop between successive, time-related phenomena; the latter examines the internal similarities that characterize every cycle unit in the series. While it may prove difficult to synthesize the findings of the two methods into a single analysis of cyclical behavior, it is obviously not impossible to do so. The most important single condition which must be met before this synthesis becomes possible is that the concept of the cycle which is employed be the same for both methods. Since the concept of the thing studied will determine the nature of the findings, to a very important extent, the conceptual basis of business-cycle study needs careful examination and delineation, regardless of the statistical technique employed (as was indicated earlier).

#### THE METHOD OF HARMONIC ANALYSIS

Mathematics has provided us with several perfectly periodic wave types, each of which is completely uniform in its amplitude of fluctuation, which may be expressed in terms of precise formulae. Since the ultimate precision and predictability for which our scientific method strives is accomplished only by the formulation of

<sup>14</sup> See Burns and Mitchell, *op. cit.*

the relationship under study, it is not surprising that many investigators have attempted to fit curves of perfect periodicity to business cycle phenomena. The curve types that have generally been employed are sine curves and cosine curves of various degrees of complexity. To the degree that irregular and nonperiodic characteristics are displayed by statistical series, we can readily see that the harmonic method attempts to substitute a perfect curve for the imperfections of reality. It might be well to examine the conceptual basis of the method, in order to form some idea of the validity of this substitution.

If we assume that all business cycles are "naturally" of the same duration (that is, take the same number of months to complete themselves) and that any variations in length of period which may be found in reality result from purely chance factors, harmonic analysis is justified. In such a situation, the average length of any series of cycles would closely approximate the lengths of many actual cycles, and those cycles which were of different-from-average lengths would differ only by small relative degrees. The same thing could be said of amplitude of fluctuations. Such a situation actually does exist with respect to many wavclike movements found in the real world (such as the vibration of a plucked string, many aspects of the weather cycle, daily patterns of solar radiation, etc.). Where this assumption may be made, the use of mathematical curves is justified by the fact that the series of real observations depart but slightly from the pure curve, the deviations being first in one direction and then in the other, but always return, so that the pure curve coincides, for all intent and purpose, with the bulk of the observed data. On the other hand, if we have a series which is changing its period-length of fluctuation and/or its amplitude in one direction or another, the pure curve will progressively explain less and less of the observed data. Again, if the chance factors affecting the real situation are more important than the natural factors which lead to perfect periodicity, then the deviations from a mathematical curve will be so great most of the time as to render the latter meaningless.

The very term business cycles carries the implication of a high degree of uniformity of period and amplitude. Perhaps this is

unfortunate, for we have never been able to prove the presence of these characteristics in most of the series of data which display business-cycle tendencies. In fact, it might be said with a high degree of truth that the failure of harmonic analysis to prove itself led to the development of other methods of cyclical investigation. Unlike many real series of data, those taken from observation of economic variables do not display the relative uniformity of amplitude and periodicity necessary for harmonic analysis. We need not seek far to find the reasons. Business cycles, insofar as their "natural" bases are concerned, are so closely tied in with many of the dynamic factors of our society (technologies, population trends, new geographic discoveries, and the like) that there is some evidence of a long-term change in the typical time-period and amplitude which characterize them. Furthermore, as we shall see later in this book, many relatively irregular forces (wars, droughts, natural catastrophes, political upsets) take on causal importance with respect to cyclical movements. Unless we can prove that these irregular influences obey some higher law of regularity, which appears absurd, harmonic analysis of any series strongly affected by these irregularities would be impossible. To terminate this discussion, then, it seems fair to hold that harmonic analysis, by its very nature, can hardly prove of great value as a method of analyzing most economic series.

#### THE METHOD OF ORTHOGONAL POLYNOMIALS

There is one method of analysis which is under current development and which gives promise of avoiding some of the faults of the harmonic method without losing many of its theoretical advantages. This is the method of orthogonal polynomials. The precise theory of this approach is highly mathematical (and for that reason will not be discussed herein), but it makes possible the fitting of smooth curves to cycles of varying period without the sacrifice of elegance. A further advantage of this method lies in the fact that it may provide, for the first time, a sure means of separating major and minor cycles, or even—if the time period be long enough—building cycles and major business cycles. Since sufficient work has not yet

been done with the orthogonal approach to allow full knowledge of its strong and weak points, nothing further will be said about it here.<sup>15</sup>

### THE ECONOMETRIC APPROACH<sup>16</sup>

Econometrics is a quantitative method used in economics which represents the use, in conjunction with each other, of mathematical economics, economic theory, and economic statistics. Applied to business-cycle research, econometrics constructs a system of equations which are designed to describe the behavior *over time* of whatever economic aggregates (variables) are thought to be significant in the behavior of the economy during the course of business cycles. Each equation indicates how the behavior of one variable (the dependent variable) is a function of (depends on) the behavior of the other (independent) variables in the equation. In order to be logically complete, there must be an equation for each of the variables (unknowns) whose course over time is to be explained. The variables consist of broad economic aggregates, such as employment, national income, consumption, savings, investment, price indexes, etc.

The system of equations (or, as they are more commonly referred to, economic *models*) may contain four basic types of equations, called *structural* equations.

1. Identities or definitional equations. These are equations which are true because of the definitions of the variables contained in the

<sup>15</sup> For a fairly concise treatment of the use of orthogonal polynomials in the analysis of time series, the reader is referred to J. G. Smith and A. J. Duncan, *Elementary Statistics and Applications* (New York, McGraw-Hill Book Company, Inc., 1944), Chaps. XIX-XXIV.

<sup>16</sup> For a more elaborate discussion than can be given in a book of this sort, the mathematically inclined reader is invited to read the following articles: J. Tinbergen, "Econometric Business Cycle Research," *Review of Economic Studies*, Vol. VII (1939-1940), pp. 73-90 [reprinted in *Readings in Business Cycle Theory* (Philadelphia, The Blakiston Company, 1944), pp. 61-86]; T. Koopmans, "The Econometric Approach to Business Fluctuations," *American Economic Review*, Vol. XXXIX (May, 1949, supplement), pp. 64-72; *idem*, "The Logic of Econometric Business-Cycle Research," *Journal of Political Economy*, Vol. XLIX (April, 1941), pp. 157-181; and W. Leontieff, "Econometrics," in *A Survey of Contemporary Economics* (Philadelphia, The Blakiston Company, 1948), pp. 388-411.

equations. An example familiar to the reader would be  $MV = PT$ , the transactions form of the equation of exchange. As a result of the definitions given, the four variables result in the given equation, because it is a truism that the aggregate value of money given in exchange for goods and services, etc.,  $MV$ , is equal to the money value of the goods and services, etc., given in exchange for money,  $PT$ . Hence the equation is a *definitional equation* or an *identity*. Another identity is seen in the relationships savings equal investment, *ex post*. These are equal because, for statistical calculations, savings are defined as that part of the national income not spent on consumption, while investment is defined as that part of the national income not consumed; therefore, they must always be equal (in the *ex post* sense, but not in the *ex ante* or planned sense). It is also evident that price times quantity equals value, by definition.

2. The second type of equation which may appear in the models of the econometrician is that which embodies what may be called *institutional conditions*, such as reserve requirements and tax schedules. For example, the equation  $D = bR$  indicates that total demand deposits  $D$  are equal to total reserves  $R$  in the banking system multiplied by a constant  $b$  whose value is the reciprocal of the reserve ratio of the member banks. Similarly, the equation  $T = aY + ZY$  might be taken to represent the total of income taxes  $T$  forthcoming at different levels of national income  $Y$ , based on a certain normal fixed tax rate  $a$  and a progressive surtax rate  $Z$ .

3. The third type of equation which might appear in an econometric model would be called a *technological equation*, either transformation functions or production functions, the latter being special cases of the former. The equation  $Q_1 = T_1 (Q_2, Q_3, \dots Q_n; a, b, c, \dots)$  indicates that the output of a particular amount of a good  $Q_1$  is a function of (depends on) the quantities of other goods ( $Q_2 \dots Q_n$ ) being produced (at full employment) and the amounts of factors ( $a, b, \dots$ ) in existence. A production function is represented by the equation  $Q_1 = f(a, b, c, \dots)$ . This equation indicates that given the (best) available technique of production (i.e., production function),  $Q_1$  is the maximum amount of commodity 1 that can be had with a given amount of the factors of production ( $a, b, c, \dots$ ).

4. The fourth, and most interesting, type of structural equations is called *behavior* equations. Behavior equations describe the reaction of groups of individuals or firms to certain economic conditions, such as incomes, prices, costs, liquid assets, stocks of capital, etc. To illustrate we shall resort to an equation (or function) which is represented diagrammatically in Chapters 2 and 3. In these chapters we have occasion to refer to the propensities to consume or save, or, as they are often referred to, the consumption and savings functions. Since savings are defined as that part of income not spent on consumption, it is apparent that the two variables are complements of each other, and that what determines one determines the other; hence we shall use the savings function or propensity to save as one illustration of a behavior equation. Such an equation may be:

$$S = f(Y, r, v) \quad (1)$$

This equation says that aggregate savings  $S$  are a function of the national income  $Y$ , the rate of interest  $r$ , and a *random* term  $v$ , which includes the effects of all other *unspecified* factors which may exert an influence on savings. We shall have more to say about this last factor  $v$  shortly.

Although equation (1) tells us that savings depend on national income, the rate of interest, and the random term, it does not tell us how savings are related to these variables. Econometricians are usually prone to assume *linear* (straight-line) relationships. For our purposes it is sufficient to define linearity as *proportionality*. For example, the dependent variable  $S$  may vary as a constant proportion of the independent variable, income. Similarly, a change in interest rates may be assumed to induce a change in savings in some constant proportion. We may now rewrite equation (1) to indicate these assumed linear relationships between  $S$  and  $Y$  and  $r$ :

$$S = aY + br + v \quad (2)$$

Equation (2) is a linear (straight-line) equation, telling us that savings vary as a constant proportion (the constants being defined by the values of the coefficients  $a$  and  $b$ ) of income, given the inter-

est rates. Should we want to indicate how *changes* in the independent variables influence changes in  $S$ , we would write:

$$\Delta S = a \Delta Y + b \Delta r + \Delta v \quad (3)$$

where  $\Delta$  (delta) stands for changes.

Let us now take stock of what we have so far in these behavior equations, particularly equations (2) and (3). We have, first of all, the dependent variable, in the above example,  $S$ . This is often referred to as the "explained" variable, to indicate that this is the variable whose behavior is being explained by the equation. Then we have the independent variables ( $Y$ ,  $r$ ,  $v$ ) often called the "explanatory" variables, for they explain the behavior of the dependent variable. In addition, we have the constant coefficients ( $a$  and  $b$  in the equations). These coefficients define the (mathematical) shape of the equations in the models. More specifically, they measure the exact influence of the "explanatory" variables, and in the models of econometrics, the constancy of the coefficients indicates that the relationship between the dependent and independent variables is taken to be linear.

Finally, we have in these equations the random term  $v$ . The concept of the random term is perhaps somewhat more difficult to grasp than the other concepts and requires a bit more explanation than has been accorded the others. The random term has been called the term which represents the influence of "all other" (unsystematic) factors on the variable that is being explained. The value of  $v$  will be seen as defined implicitly by equation (2) as

$$v = S - aY - br \quad (4)$$

The random term  $v$ , remember, is a magnitude representing the combined effect of all unknown forces on  $S$ . Because of the "unknown" factors and the unsystematic behavior of these unknown influences, econometricians have deemed it wise to state the value of this random term  $v$  in terms of some probability distribution.

Even if the magnitude of a particular shift ( $v$ ) . . . seems to be unexplainable and unpredictable it might still be possible to make an empirically significant statement about the probability with which shifts of various magnitudes are likely to occur, a statement analogous to that

which defines, for example, the chance of drawing a red ball from an urn containing two red and eight white balls as being one in five, *i.e.*,  $1/5$ .<sup>17</sup>

The assumptions concerning the probability distribution of these random terms depend solely on the judgment of the individual investigator, who may feel that the distribution will follow that of a normal curve, or some sort of a skewed curve, etc., almost invariably the former, however. It is worthy of note that the assumption which the investigator does make with respect to the probability distribution of the random term(s) is considered to be of the same importance as the assumptions the investigator makes concerning the theoretical relationships among any other group of dependent and independent variables, where the latter are known and predictable.

As yet, our equations lack one essential feature which characterizes many of the equations in an econometric model, namely, the element of time. That is, the models of the econometrician are dynamic, in the sense that some of the equations describe the relationships of variables belonging to different time periods. For example, the savings in equations (2) and (3) are usually related, not to current national income, but to the national income of some past period, say, the preceding year. Thus instead of indicating an instantaneous relationship among the dependent and independent variables, that is, that the former reflect the values of the latter in the same period that these changes occur, the equations represent *lagged* relationships, that is, discrete time intervals between changes in the independent variables and the changes in the dependent variables. It is a very simple thing to adjust, for example, equation (2), by inserting time symbols into the equation thus:

$$S_{t_1} = aY_{t_0} + br_{t_0} + v_{t_1} \quad (5)$$

Equation (5) is simply equation (2) modified to take account of the lagged relationships which exist between income and the interest rate and savings; the last is assumed to take place one period after the first two.

The reader might be interested in the development of a simplified set of equations in illustration of a model. The following set

<sup>17</sup> Leontieff, *op. cit.*, p. 396.



of equations provides the basis of Tables 8 and 9 in Chapter 3, which are a sketch of the results of the injection of a constant sum of new money into the economic system, under the assumption of certain values of the parameters of the model constructed by Professor Samuelson to work out the effects of a continuous injection of new investment.<sup>18</sup>

We use the following symbols:

$Y_t$  is the national income in period  $t$ .

$C_t$  is the national level of consumption in period  $t$ .

$I_t$  is the level of autonomous investment in period  $t$ .

$I'_t$  is the level of induced investment in period  $t$ .

$M_t$  is the marginal efficiency of capital in period  $t$ .

$r_t$  is the rate of interest in period  $t$ .

$a$  is a constant coefficient: the marginal propensity to consume.

$b$  is a constant coefficient: the acceleration effect or "relation."

$\Delta$  is the symbol for change (increase or decrease).<sup>19</sup>

First, we have an income identity:

$$Y_t = C_t + I_t + I'_t \quad (6)$$

The three independent variables in equation (6) are defined as follows:

$$C_t = aY_{t-1} \quad (7)$$

$$I_t = f(M_t, r_t) \quad (8)$$

$$I'_t = b(C_t - C_{t-1}) \quad (9)$$

By the use of the mathematical technique of elimination, we combine equations (7), (8), (9) with equation (6) and get:

$$Y_t = f(M_t, r_t) + aY_{t-1} + b(C_t - C_{t-1}) \quad (10)$$

Equation (10) is the basic equation from which tables like 8 and 9 in Chapter 3 may be derived. Equations like the type just presented are the product of the investigator's judgment of the most important aggregative relationships which govern the behavior of the economic system. It should be noted that not only is the struc-

<sup>18</sup> See Chapter 3, pp. 118-123.

<sup>19</sup> The reader probably will not understand the meaning of the above definitions without having read all of Chapter 3. It is suggested, therefore, that the attempt to understand the economics of the following equations be postponed until Chapter 3 is read.

ture of the model, the shapes of the various functions which are included in the model, a matter of the individual's judgment, but the choice of what variables and relationships to include in the model is also subject to the investigator's discretion. It is necessary, to avoid making the model unwieldy, particularly for purposes of statistical estimation, to limit the number of equations in the model (to, say, 20 to 40 or so). This means that the investigator has to decide what relationships are the most significant, and leave the rest to be embraced by terms which are taken as given or "known" (*i.e.*, terms which are assumed not to require an equation to explain them) and the terms we have called random terms, which take account of errors and other unforeseen changes (called "shocks") in the functions. It is in the choice of significant variables and relationships that the role of economic theory comes into play, for the choice of variables, etc., must be made on the basis of some theory or hypothesis of the econometric investigator.

The setting up of the theoretical model by the econometrician is only the first step in the investigation. The next step is the application of statistical techniques to factual data in order to estimate the values of the parameters for these equations, that is, the theoretical constants (coefficients). The factual data which are used to estimate the parameters of the model are comprised of collected time series which describe the observed changes in the value of the different variables in the model. After the statistical data are "processed," the original equations [*e.g.*, equations (6), (7), (8), and (9)] are then "reduced" (solved simultaneously), and the statistical method of least squares is applied to the reduced form (10) of the original equations to solve for the parameters.<sup>20</sup> In the estimation of the parameters of the models in this way, econometricians now draw on some of the recent developments in the theory of statistical inference.

Once the estimates of the parameters of the model have been made, a value of a dependent variable for any given year,  $t$  ( $Y_t$  in equation (10), for example), may be found by inserting into the

<sup>20</sup> For the mathematically minded reader, the reduced form or simultaneous solution of equations (6), (7), (8), and (9) is equation (10). It is in equation (10) that the statistical data are inserted and to which the method of least squares is then applied to solve for the parameters (constants)  $a$  and  $b$ .

reduced form of the proper equation (10) the given (observed or assumed) values of the independent variables and the values of the unknown  $Y$  for previous periods ( $Y_t$ , in equation (10), e.g.). Econometricians usually try to state their results within the limits of some standard error of estimate. When this is done, the implicit idea is that the original hypothesized model (system of equations) represented correctly the behavior of the economic system. Thus the significance of the limits of the standard error of estimate is really no greater than the original theory underlying the basic model in the first place.<sup>21</sup>

Perhaps the outstanding weakness of the econometric approach is the necessity of limiting the number of equations and variables in the models to a rather small number in order to keep the later step of statistical investigation within manageable proportions. As a result, many potential sources of information are either ignored because they cannot be fitted into the equations, or else treated as "givens" and, so, not explained. In addition, because of the extreme "bias" toward linearity in the setting up of the functional relationships, there is too strong a tendency on the part of econometricians to treat as constant (parameters) variables and lags which, in fact, may change significantly over the course of the cycle.

Since the econometric approach is still largely in the experimental and developmental stages, it is difficult to criticize. The biggest problems at present undoubtedly are: (1) improving the estimates of the parameters of the models, and (2) improving the estimates of the probability distribution of unspecified variables included in the random terms of the equations.<sup>22</sup>

<sup>21</sup> For a more complete picture of the use of model building and statistical testing in business-cycle analysis, see the following: J. Tinbergen, *Statistical Test of Business Cycle Theories*, I. *A Method and Its Application to Investment Activities*; II. *Business Cycles in the United States of America, 1919-1932* (Geneva, League of Nations, 1939); L. R. Klein, "The Use of Econometric Models as a Guide to Economic Policy," *Econometrica*, XV (April, 1947), pp. 111-151; and *idem.*, *Economic Fluctuations in the United States, 1921-1941* (New York, John Wiley & Sons, Inc., 1950).

<sup>22</sup> The mathematically inclined reader is invited to examine the recently published volume, *Statistical Inference in Dynamic Economic Models*, T. C. Koopmans, Ed. (New York, John Wiley and Sons, 1950). This excellent group of articles will indicate the steps being taken to solve the problems indicated in the text.

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## CHAPTER 2

### ***FLUCTUATIONS IN NATIONAL INCOME: CONSUMPTION, SAVINGS, AND INVESTMENT***

#### **BASIC NATIONAL INCOME ANALYSIS**

The aim of this discussion is to acquaint the student with the essential tools of national income analysis, a firm grasp of which is necessary for an understanding of the remainder of this book. Basically, all business-cycle theories are concerned with fluctuation in national income and employment. By analyzing the various theories with the same set of tools, it is hoped that the student may be able to find his way through the maze of terminological difficulties and see the fundamental similarities shared by many apparently conflicting theories. Most of the theories to be discussed fall into one of two broad categories: (a) underconsumption, and (b) overinvestment. Within these two categories, many apparent theoretical differences usually turn out to be nothing more than differing emphasis on certain aspects of the cycle. The use of national income as the broad conceptual basis of this treatment is designed to point up this characteristic of current controversy in explaining the trade cycle.

#### ***Definitions of Concepts*<sup>1</sup>**

*Consumption*—The purchase of new finished consumer goods.

*Saving*—The purely negative act of not spending for consumer goods.

<sup>1</sup> The student should familiarize himself thoroughly with these concepts, particularly saving and investment. The latter term must never be taken to

*Investment*—The purchase of new finished capital goods, plus a net increase of inventories or minus a net decrease in inventories. Investment may be considered on a gross or net basis. *Gross* investment includes the purchase of all new finished capital goods (in addition to net changes in inventories), whether for replacement purposes or as a net addition to the existing stock of plant and equipment. *Net* investment, on the other hand, embraces only the purchase of new finished capital goods which constitute a net addition to the existing stock of capital goods. An oft-used synonym for net investment is the term capital formation. We might explicitly make allowance for "net *foreign* investment," which is the net difference ( $\pm$ ) in values on current account in a country's balance of payments with the rest of the world.

While most of the discussion in the present volume will be concerned with net investment, it will sometimes be necessary for us to concern ourselves with gross investment, also. The reason is that there is nothing automatic about the replacement of worn-out or obsolete capital goods. Investment for replacement purposes often exhibits much of cyclical volatility that we normally associate with capital formation. In a discussion of business cycles, therefore, many of the sources of fluctuation in net investment are also responsible for cyclical fluctuations in the rate of investment for replacement.

*Hoarding*—The holding of idle cash balances, including bank demand deposits. Since the concept of hoarding is discussed in great detail in Chapter 4, we shall defer further comment till then.

*National Income*—(in current prices) is equal to the sum of the dollar values spent on consumption and investment in a given time period. (In the ensuing discussion the time period used will be the year, although any other period would be just as feasible.)<sup>2</sup>

We have used the term national income in something of a

— — — — —  
mean the purchase of securities. This act is not in itself an act of investment, for the seller of the securities may use the funds to repay bank debt or to build up liquid assets, or he may even use them for consumption purposes. Failure to follow closely the terms as defined in the text will invariably lead to confusion in the student's thinking.

<sup>2</sup> Note should be taken at this point that national income is equal to, but not determined by, consumption and investment. Elaboration of this point will come in due time.

generic sense here. In more technical parlance, the term is defined a bit more closely. As a matter of fact, there are numerous terms that refer to the income stream of a nation. One is *gross national product*, which may be defined, briefly, as the value of all consumer goods produced plus gross investment, domestic and foreign, plus the value of government expenditures. If from gross national product we subtract the value of capital goods produced for replacement purposes, we get *net national product*, which is the value of consumption plus the value of net investment. National income statisticians, measuring net national product at current market prices, reduce the value of this income figure by indirect taxes to get a figure to which they give the *technical* name national income. This latter value may also be computed by adding up the earnings payable to the factors of production, that is, wages, interest, rent, and profits (in addition to making certain adjustments). Another concept that is of importance to us is called *disposable* income. This is obtained by first deducting from national income such items as corporate taxes, undistributed corporate profits, and social security taxes, and then adding the value of "transfer" payments (which are payments people receive without participating, either personally or through property, in the production process); the result of these calculations is called *personal* income. Disposable income is personal income less personal taxes.

The national income concepts which will concern us most are gross national product, net national product or national income, and disposable income. The first is important because we are concerned in the present context with fluctuations in business activity and employment. Gross national product, by definition, embraces the sum total of outlays made for capital goods by all business units, the total of outlays made for consumer goods by all household units, plus government expenditures. As we shall presently observe, it is the variations in expenditures by business firms, households, and the government which underlie the fluctuations in output and employment that we call business cycles. The remainder of the book might be said to consist, for the most part, of various attempts to explain why business firms and household units vary their expenditures on investment and consumption, respectively. Moreover,

it follows from the fact that gross national product encompasses all forms of economic activity that with its fluctuations will be closely associated fluctuations in the volume of employment. From the standpoint of the problem of employment, it is of little concern whether people are employed in the production of capital goods for replacement or as net additions to the existing stock of capital.

During most of this book, however, our attention will be centered on the concept of net national product, or, as we shall refer to it, national income. The reason for this is that whenever we discuss investment, we shall be referring primarily to *net* investment. For one thing, virtually all the writers whose theories we discuss use the term investment in the "net" sense, and not without reason. It is net investment which tends to be by far the more variable of the components of gross investment. By and large it is fluctuations in net investment which *explain* the cyclical fluctuations in national income. Investment for replacement is much more closely related to and *dependent* upon the current rate of output. Whereas changes in net investment are one of the basic *sources* of fluctuations in income, changes in replacement demand are primarily the *product* of changes in income. We may liken the former to a cause and the latter to an effect. Thus the quest for an explanation of the origins of business cycles has led most writers into an investigation of the reasons for changes in the rate of *net* investment. Unless otherwise stated, therefore, the term national income hereafter is to be construed to refer to the sum of expenditures on consumption and net investment.<sup>3</sup>

In studying the spending habits of consumers, it is necessary to employ the more refined national income concept called disposable income. The reason is the fairly obvious one that insofar as the

<sup>3</sup> The present writer believes that there has been a tendency to overdo the treatment of replacement demand as a dependent variable. While it tends to be a function of current output, it is most certainly not an unchanging function or relation. In durable goods, especially, replacement is capable of being postponed during downswings, and in periods of undue pessimism is often responsible for sharper declines in national income than would occur if replacement were rigidly related to current output. By the same token, widespread optimism in periods of upswing often results in a faster rate of replacement than would be indicated by a hard and fast relation between current output and replacement of worn plant and equipment. This point is discussed in another connection in Chapters 3 and 11.



amount household units spend on consumption is related to income, the relation is likely to be between consumption and income which households actually have at their disposal for spending (or saving). They will hardly be influenced by total income produced, so long as part of the latter is retained by corporations in the form of undistributed profits or is taken by the government in some form of taxes, etc. Hence whenever reference is made to consumption in relation to income, we will ordinarily be referring to disposable income.

### *Fluctuations in the Level of National Income<sup>1</sup>*

Disposable income may be spent on consumption or it may be saved. That part of current income which is spent on consumption immediately becomes part of the income of the next year. That part of the disposable income not spent on consumption is *saved*. It is the manner of disposition of these savings which determines whether the national income will remain stable or will fluctuate from one year to the next.

Savings may be directed *into* any one of the following channels of disposition: (a) investment, (b) hoarding, (c) repayment of bank debt, or (d) expenditure on imported goods. Suppose we now examine the effects of these various actions on income stability.

*Conditions for National Income Stability.* If all current savings are invested, the income of the current period will be the same as that of the immediately preceding one. This condition implies that there be neither net hoarding or dishoarding nor net changes in the volume of outstanding demand deposits. Figure 11 illustrates this condition.

In this figure, income is represented by the letter *Y*, consumption is represented by the letter *C*, saving by the letter *S*, and investment by the letter *I*. It is assumed that in 1941 the nation spends half its disposable income (received from 1940) on consumption and saves half. Since income spent on consumption immediately becomes part of the income stream, the critical issue is the manner in which

<sup>1</sup>This discussion is modeled after that employed by D. H. Robertson, "Saving and Hoarding," *The Economic Journal* (September, 1933), pp. 299-413. The analysis in the text will proceed in terms of money income. The effects in terms of real income will be discussed later.

savings are disposed. We observe that all current savings are invested ( $S = \$50$  and  $I = \$50$ ) in the course of the year 1941. As a result, the money income which accrues in that year (to be spent in 1942) is precisely equal to that which accrued in the year 1940.

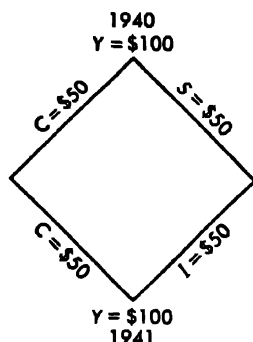


Figure 11. Monetary Stability: Savings Equal Investment

Thus we observe that as long as all current savings of any year are invested during that year, the income of that year will be the same as that of the preceding one. *The condition for income stability is: savings equal investment.*<sup>1</sup>

*Declining National Income.* If a portion of current savings is hoarded, used to repay bank debt, and/or spent on imports, so that current investment is *less* than current savings, the income of the current year will fall below that of the preceding one, and the national income will continue to fall as long as current investment remains less than current savings. Figure 12 illustrates this process.

<sup>1</sup> This statement is not wholly accurate. As we shall soon observe, consumption is dependent on income (current and/or past) and other variables besides income. The relationship between consumption and income is described by a function, that is, a *schedule* relationship, which we shall shortly call the propensity to consume, or consumption function. The statement in the text that income will remain stable so long as all current savings are invested contains the implicit assumption that the consumption function or schedule, that is, the relation between consumption and income, does not change, so that the volume of current savings does not change either. We have also assumed the simple case of a permanent plateau of investment, which is determined independently of the level of national income. The full implications of these qualifications will become clear to the reader by the end of this and the next chapters.

It is to be seen that \$25 of the current savings, instead of being spent on investment goods, have been hoarded, or used to repay bank debt, or spent on imports, or any combination of these three. All these acts reduce current income, since they constitute a contraction of the money stream.<sup>6</sup> A saver may use his savings to repay bank debt; or he may hold them in the form of idle cash balances (including bank checking accounts); or he may use them to buy imports; or he may purchase securities from another person or institution (financial or nonfinancial) who, in turn, hoards the funds or uses them to repay bank debt (or buys a security from a commercial bank—the effect is the same) or purchases imported products. In any case, \$25 of the current savings were not spent on investment. Consequently, it is to be seen that the money income which accrues in the year 1941 is less than that which accrued in 1940, by precisely the excess of current savings over current investment. As long as this state of affairs continues, national income will decline from year to year, until the rate of saving is reduced to a level equal to the rate of investment. Thus, *the basis for declining income is: savings are greater than investment.*<sup>7</sup>

<sup>6</sup> The student may wonder why the purchase of imports reduces domestic national income. Buying foreign-produced goods does not add directly to the amount spent on domestic goods and therefore creates no income in the domestic economy. This remains true (for any given year) even though this very act of importing may eventually (in later years) increase exports and thereby the national income.

<sup>7</sup> An acutely discerning reader will observe that the analysis thus carried out follows simply from our definitions. Thus in Figures 11 and 12 we have said, in effect, that  $Y_{1940} = C_{1940} + S_{1940}$  and  $Y_{1941} = C_{1941} + I_{1941}$ ; whence it *must* follow (by definition) that  $Y_{1941} - Y_{1940} = I_{1941} - S_{1940}$ . Of what operational value in analyzing income changes can equations be which are mere tautologies? The answer is, not much. But it is not necessary that such equations be mere identities or tautologies. The truistic or definitional character of the income equations disappears as soon as we recall the statement made in footnote 5, namely, that consumption is dependent on income (current and/or past) to a considerable degree. That is, there exists a functional (or schedule) relationship between consumption and income, which may be written mathematically as  $C_t = f(Y)$ , where  $Y$  may be taken as income of a current or past period and  $C_t$  represents consumption of a current period. [Because we have defined savings as income not spent on consumption, this last equation may also be written  $S_t = f(Y)$ .] In the discussion of Figures 11 and 12, we have assumed that the relationship between  $C$  and  $Y$  is:  $C_{1941} = \frac{1}{2}Y_{1940}$ , that is, that consumption in any current year will equal one half the income of the previous year. As soon as this equation is recognized, the first two income equations become operational, that is, they assume real explanatory value. For then, as

*Rising National Income.* Businessmen who want to invest are not necessarily dependent on the current savings of private individuals for their borrowed funds. They may also borrow from commercial banks, who simply create the money; or they may use

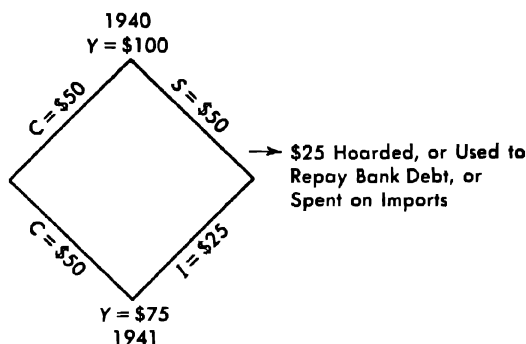


Figure 12. Monetary Competition: Savings Exceed Investment

previously hoarded cash balances; or, even if they do borrow from private individuals or institutions, they may get not only current savings but also the proceeds of dishoarding by these sources. They may also obtain additional money income for investment purposes via a sudden increase in exports. Current investment, then, may *exceed* current savings. If this is the case, the national income of the present period will *rise above* that of the preceding one. Figure 13 depicts the manner in which this occurs.

Here \$25 is seen to come from commercial banks, or from dishoardings, or from increased exports, and to be used for investment purposes. Moreover, this \$25 is in addition to the \$50 of current savings, all of which have been invested. Current investment thus exceeds current savings by the \$25 borrowed from banks, etc., and

soon as a disparity between savings and investment arises (say, because of a decline in current investment), it becomes possible to predict accurately the amount by which income will decline before savings are, *ipso facto*, brought into equality with investment. The manner in which this is done involves what is known as the "multiplier" principle, with which we shall concern ourselves extensively in Chapter 3. Cf. A. H. Hansen, "The Robertsonian and Swedish Systems of Period Analysis," *The Review of Economics and Statistics*, XXXII (Feb. 1950), pp. 24-29.

the national income accruing in 1941 is seen to exceed that which accrued in 1940. If this condition persists, national income will rise from year to year, until the higher national income raises the annual rate of saving to a point of equality with the annual rate

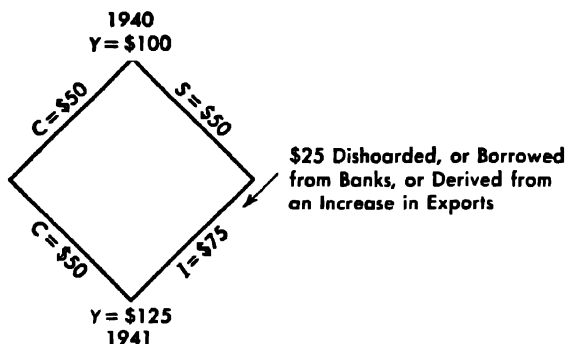


Figure 13. Monetary Expansion: Investment Exceeds Savings

of investment. Hence we can generalize by saying that *the condition for a rising national income is: investment must exceed savings.*<sup>\*</sup>

In summary, from the above analyses we see that the prerequisite of income stability from year to year is equality between current savings and current investment. As long as investment is less than savings, income will fall. As long as investment exceeds savings, income will rise. The respective changes in income will continue until they bring savings into equality with investment.

<sup>\*</sup> The observations made in footnote 7 concerning a declining national income, which is the product of an excess of savings over investment, apply to this analysis as well. Once again, it would appear that income in 1941 is bound to exceed that of 1940 (when investment is greater than savings) merely as a result of the way in which we have *defined* incomes of the two years:  $Y_{1940} = C_{1941} + S_{1941}$  and  $Y_{1941} = C_{1941} + I_{1941}$ . As before, it would appear that such truistic equations lack explanatory value. Also as before, this difficulty disappears as soon as it is recalled that consumption is dependent upon (functionally related to) income (current and/or past). Once an equation such as  $C_t = f(Y_t)$ , for example, is recognized, it becomes possible to use the two income equations to predict the amount by which national income will rise before savings are, *ipso facto*, brought into equality with the assumed higher rate of investment. Such an analysis is, again, known as the "multiplier" principle, which we shall examine thoroughly in Chapter 3.

## THE DETERMINANTS OF NATIONAL INCOME

Earlier, the reader was cautioned that while income was equal to the sums spent on consumption and investment, it was not determined by them. Properly stated, national income is *determined by* the nation's *propensity to consume* and its *level of net investment*. Let us now examine these two concepts and the factors which influence them.

*The Propensity to Consume*

The propensity to consume is a schedule indicating the nation's aggregate demand for consumer goods at various levels of national income. Such a schedule might be exemplified by the following table:

**Table 1** *The Propensity to Consume*

(in billions of dollars)

| <i>National Income</i> | <i>Consumption</i> |
|------------------------|--------------------|
| 50                     | 60                 |
| 100                    | 100                |
| 150                    | 135                |
| 200                    | 165                |
| 250                    | 190                |
| 300                    | 205                |

This schedule (or table) is a simplified representation of the propensity to consume. The figures are hypothetical, but they will suffice to illustrate the principle. A more convenient way of showing the propensity to consume would be in the form of a graph, such as Figure 14.

*Significance of the Propensity to Consume.* With the aid of the 45° bench mark line (any point on which indicates the expenditure of *all* income on consumption), we can illustrate a very important characteristic of this consumption curve (or function) which we call the propensity to consume. It will be observed that, except for low levels of national income, the curve is always below the 45° line, indicating that its slope, for the most part, is less than 45°. This means that changes in national income are accompanied by *smaller* changes in the amount of consumption. On the graph below, for example, an increase in income from 100 to 150 billion

dollars results in an increase in consumption from 100 to 135 billion dollars. A further increase in income of 50 billion dollars results in an increment in consumption of only 30 billions, etc."

At the same time, it is possible to use Figure 14 to measure the

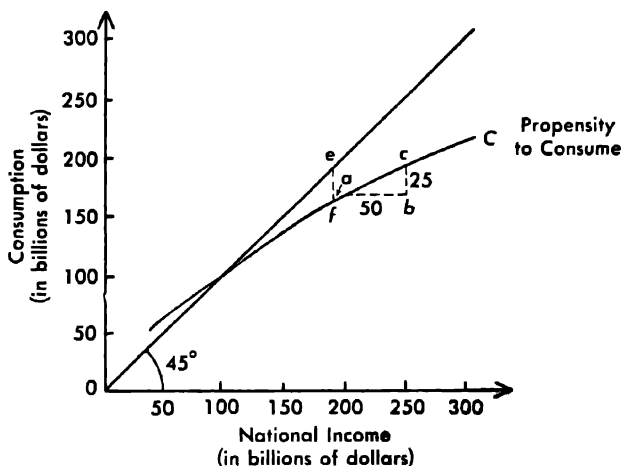


Figure 14. The Propensity to Consume

amount of *savings* forthcoming at each level of income. We have defined savings as that part of income not spent on consumption. Since the 45° line is one any point along which indicates the expenditure of 100 per cent of income on consumption, and since the consumption function describes the *actual* amount of income spent on consumption (at each income level), the difference between the two must represent savings. Thus the vertical distance between the two curves at any level of income measures the volume

<sup>9</sup> For those who are mathematically inclined, another way of viewing the same principle can be illustrated from Figure 14. By saying that the slope of the consumption function is less than that of the 45° line, we have said that the numerical slope of the consumption function is less than unity. The triangle shown in Figure 14 is the numerical slope of the propensity to consume, and this slope is equal to the ratio of the distance *bc* to the distance *ab*, that is, to  $bc/ab$ . Thus, on the graph, when we move from the point *a* to the point *c*, the slope of the consumption function is 0.50 (or  $25/50$ ), or less than unity. The slope of the consumption function is known as the *marginal propensity to consume*, a concept with which we shall be greatly concerned in Chapter 3.

of savings forthcoming at that income. The vertical distance *ef* in Figure 14 is an illustration of this point.

One further observation is worthy of note. The student may wonder about the significance of that portion of the consumption function which lies above the 45° line. If the fact that the propensity to consume lies below the 45° line indicates that consumption is less than national income, then it follows that the opposite situation signifies that consumption is *greater* than national income. But, it may be asked, how can the community consume more than it is producing? The answer is fairly simple. The community is eating up its capital, that is, it is allowing its inventories to be drawn down and/or is failing to replace capital equipment as it wears out. In essence, the nation is both *dissaving* and *disinvesting*. Reference to Table 1 reveals that this is the case with our hypothetical community when its income falls below 100 billion dollars. At the income level of 50 billion dollars, there is net dissaving (or disinvestment) of 10 billion dollars.<sup>10</sup>

### *The Propensity to Save*

An alternative way of viewing what has just been said is with reference to the so-called propensity to save. The propensity to save (or savings function) is a schedule showing the amounts the nation will save at various levels of national income. As with the propensity to consume, the propensity to save may be represented in either tabular or graphic form (see Table 2 and Figure 15).

<sup>10</sup> Now that the student is familiar with the term "propensity to consume" (or consumption function), it is possible to explain why it was emphasized in the text that national income is determined by the *propensity to consume* (not consumption) and investment. What is the difference between consumption and the propensity to consume?

*Consumption* refers to that portion of income which is spent on new finished consumer goods. If the student will turn back to Figure 14, he will observe that it is possible for consumption to alter either as the result of a change in national income or as the result of a shift in the position of the curve itself, with no change in the national income (or even the result of the two occurring together). A change in consumption resulting from a change in the propensity to consume, even though income remained unchanged, means that the *spending habits* of the nation have altered, so that now consumers are willing to spend more or less on consumption goods than before (at each given level of income) depending on whether the function shifted upward or downward. A change in income, however, might bring about a change in consumption without affecting the position of the consumption function.



The propensity to save is merely the complement of the propensity to consume. Reference to our earlier definition of saving (as the *negative* act of not spending for consumer goods) should

**Table 2 The Propensity to Save**

(in billions of dollars)

| National Income | Savings |
|-----------------|---------|
| 50              | - 10    |
| 100             | 0       |
| 150             | + 15    |
| 200             | + 35    |
| 250             | + 60    |
| 300             | + 95    |

help to make this clear. The savings schedule (propensity to save) may be derived very simply by computing the difference between consumption and income at the various income levels. The same

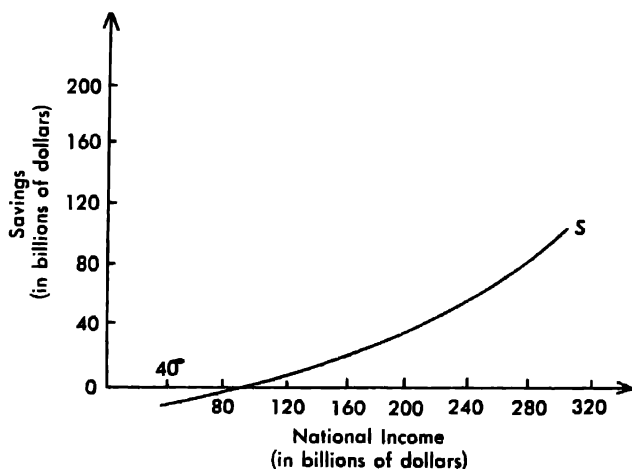


**Figure 15. The Propensity to Save**

thing could be accomplished by measuring vertically the distances between the consumption function and the 45° line at the various levels of income. Since the savings function is merely the complement of the consumption function, certain characteristics of the former are immediately evident: If the propensity to consume has a slope less than unity, the propensity to save must be a rising

function; likewise, since the consumption function is concave downward in shape, the saving function must be concave upward.

In discussing the factors which influence the consumption function, it should be obvious to the reader that implicitly we will be describing the propensity to save. The factors discussed can be divided into two groups: (1) those which influence the propensity to consume (propensity to save) mainly from a long-run standpoint, because they themselves change very slowly, and (2) those which are primarily short-run influences, because they are subject to sudden and rapid change. No attempt will be made to discuss these factors in detail, inasmuch as their details and significance will be brought out by the various theories of the business cycle which we shall soon examine.

#### *Long-run Factors Which Influence the Propensity to Consume*

The most important factor exerting long-run influences upon the consumption function is probably the *distribution of the national income*: the more unequal the distribution of the national income, the lower will be the propensity to consume; the more equal the distribution of our national income, the higher will be the position of the consumption function. Investigation of this phenomenon reveals that the high-income groups are able to satisfy their needs and desires with only a portion of their income. Thus, they not only save when their incomes are stable, but they also tend to save the bulk of any increment in their incomes. On the other hand, low-income groups are unable to satisfy their needs and desires, therefore save little (if any), and tend to consume the bulk of any increase in their incomes.

*Changes in the rate of interest* undoubtedly influence the propensity to consume. Oddly enough, no *a priori* generalization as to the direction of these effects is possible. The classical theories of interest generally hold that saving would vary directly with the rate of interest. This might follow from a desire to be able to lend more (less) at higher (lower) interest rates, together with a possible stimulating (depressive) effect a low (high) rate of interest might have on consumer installment buying. On the other hand, exactly opposite effects are possible. Many people save in order

to accumulate some definite amount of assets (varying in their liquidity). If a fixed goal is in mind, a higher rate of interest means that the goal is attainable with a lower rate of saving. Opposite tendencies would result from a lower rate. Thus, in the long run, the rate of interest probably does have significant influence on the consuming habits of the public, though in which direction it is difficult to say because of the conflicting effects of changes in the interest rate. Only empirical testing can provide the answer with respect to any given situation.

*The structure of the tax system* must also play a role as a long-run influence on the consumption function. Obviously, taxes affect consumption. Obviously, too, if the high-income groups tend to save more of their incomes than do the poor, a tax on the rich is less likely to reduce aggregate consumption than a tax on the poor. The one will probably reduce saving, the other consumption. Analysis of the tax structure of all levels of government indicates that our tax structure, on the whole, has not altered substantially through the years in its degree of progressiveness.<sup>11</sup> A significant change in the degree of progressiveness would certainly alter the position of the consumption function.

A fourth, and final, long-run determinant of the propensity to consume might be described by the catch-all phrase "*habits and customs as to spending and thrift*." A community strongly convinced of the virtue of thrift would have a comparatively low propensity to consume. Feeling the necessity of providing insurance for dependents, of ensuring higher levels of education on an individual basis, or of protecting against future illness and unemployment, a community would tend to save more at various levels of income than would one less concerned with the future or one which provided for these things at the *public* (governmental) level through unemployment and health insurance, etc.

Intimately associated with the last mentioned factor will be the rate of population growth. This may be demonstrated simply by assuming a community with a stable population and income, whose people save only for retirement. When finally the age distribution

<sup>11</sup> This phenomenon is explained by the extreme regressiveness of the tax structure at the state and local levels.

of the population had attained its equilibrium position, the dissavings of the retired people would just offset the positive savings of the young people of the community. Thus aggregate saving would be zero. A growing population, on the other hand, would have a larger proportion of young people than old, and the positive savings of the former would more than offset the dissavings of the latter, so that aggregate savings would be positive. And the higher the rate of population growth, the larger would be the rate of aggregate savings, that is, the higher would be the propensity to save.

The rate of growth of national income is also important in this connection. Given the rate of population growth, the more peoples' savings are embodied in fixed income securities, the smaller will be the sums available for liquidation, expressed as a *fraction* of a growing national income. From this it follows that the faster the rate of growth of national income, the smaller will be the amounts of dissaving of these fixed income groups, again, expressed as a percentage of national income; hence the higher will be the percentage of national income taking the form of positive net saving, that is, as before, the higher would be the savings function.

### ***Short-run Factors Which Influence the Consumption Function***

The community's *expectations* as to changes in prices, income, and employment affect the position of the consumption function. For reasons which should be self-evident, the expectations of rising prices, income, and employment are likely to raise the propensity to consume. Anticipation of falling prices, income, and employment will undoubtedly have a depressing effect on consumption.

*Liquid assets and recent changes therein* also exercise a short-run influence on the propensity to consume. When people have large amounts of liquid assets, they exhibit a tendency to spend more on consumption at various income levels than is the case when the quantity of liquid assets is small. This is particularly true where these assets are more evenly distributed over the various income groups. Testimony in support of this fact may be found in our postwar experiences. The tremendous liquidity which resulted from our methods of financing World War II undoubtedly had a

strong stimulating effect on the consumption function during the years immediately following the war.

*The level of individual incomes in the recent past* exerts a fundamental influence on the propensity to consume. The amount people will spend on consumption out of a given current income will tend to be strongly influenced by the living standards to which they have grown accustomed in fairly recent income periods. Consumers are likely to resist curtailment of their living standards through loss of income by digging into savings and by borrowing. In similar fashion, households are not likely to raise their living standards immediately in response to increased incomes, when the latter carry total incomes to unprecedented levels.

*Sudden changes in individual incomes* arising from unforeseen tax allowances, bonuses, capital gains, etc., all contribute toward an upward shift in the propensity to consume. Of course, such things as unforeseen capital losses might have the opposite effect.

*Recent, but temporary, shifts in income distribution* resulting from sudden wage increases coming from profits, sudden price rises, etc., would also contribute to short-run changes in the position of the consumption function.

### ***Investment and the Marginal Efficiency of Capital***

We have asserted that national income is determined by the propensity to consume and the level of investment. Having examined the nature of the first determinant, let us proceed to a study of the second, investment. Investment was defined above as the purchase of new finished capital goods, plus any net increase in inventories or minus any net decrease in inventories.

What determines the level of investment? Its basic determinants are the marginal efficiency of capital and the rate of interest. Where these two are equal, the level of investment will be given. Before proceeding further, we shall examine the meaning of these concepts.

*The Marginal Efficiency of Capital.* By the "marginal efficiency of capital" is meant the *anticipated rate of return* over its entire life on the original cost of a contemplated investment. For example, suppose a firm calculated that a given investment in new

equipment costs \$100,000. Assume further that the firm expected this machine to yield a return, net of all costs (such as maintenance, depreciation, raw material, etc.) except interest charges, of \$5,000 per annum. To determine the marginal efficiency of that capital, we would simply calculate the ratio (expressed as a per cent) of the anticipated annual *net* yield (*i.e.*, net of all costs but interest costs) to the original cost. In the example given, \$5,000 divided by \$100,000 results in a value of 5 per cent. The marginal efficiency of capital in this case is 5 per cent. That is to say, the annual *expected* net yield on the investment of \$100,000 is 5 per cent.

The student should note carefully the emphasis placed on the word *anticipated* (or *expected*) in the above definition of the marginal efficiency of capital. When a producer invests in plant or equipment, he ordinarily expects it to have a minimum life span of 3 to 5 years, often much longer. In such a case, he can never be absolutely certain about the revenues that will accrue from the investment. At best, he can only guess, intelligently perhaps, but still guess. What factors, then, might be expected to influence a producer's guess as to the probable rate of return on a contemplated investment? Of necessity, our answer must be short; otherwise, we should be "stealing in" upon the business-cycle theories which we have yet to consider. As with the propensity to consume, it seems best to separate the factors influencing the marginal efficiency of capital into short-run and long-run influences.

### ***Long-run Factors Which Influence the Marginal Efficiency of Capital***

*The rate of growth of population* operates primarily through its effect on the demand for necessities of life, especially that for residential building. The basic needs of a rapidly growing population require a larger proportion of capital investment than does the demand (say, for personal services) such as is likely to characterize a slowly growing or stationary population. Rapid population growth also exerts its influence on capital formation in such broad fields of investment as municipal and public utilities, etc.

*The growth and development of new territories* provides a large source of heavy investment activity, too. A high volume of construction activity is likely to arise from the need to provide neces-

sary transportation facilities (highways, railroads, and transportation equipment). The rate of residential, commercial, and industrial building activity is likely to be relatively high in newly developing areas, since they need housing, retail outlets, and manufactures which are not easily transported. It should also be clear that a rapid rate of territorial expansion is likely to go hand in hand with a high rate of population growth, so that effects of these two factors will probably overlap.

*Improvements in techniques of production* are bound to stimulate the demand for new capital goods, particularly if these improvements are of the labor-saving variety. A new process which permits lower costs of production to one producer often forces his competitors to follow suit, thereby raising the industry's investment requirements. The development of new products often provides an outlet for new investment activity, especially when new plants and or equipment may have to be created in order to produce the new goods. An obvious, if extreme, example in recent times would be the automobile. The new demands for steel which it created were responsible for sizable expansions of investment in the steel industry. The growth of and investment in new parts factories to supply the auto industry, the new demands on the rubber industry, the need for greater output in the textile and glass industries, in highway construction, etc., all tremendously stimulated investment activity. The automobile also provides a beautiful example of how technological progress may, of itself, greatly expand the market for a product. The lower costs of production which followed the adoption of assembly-line techniques made possible automobile prices so low that they were brought well within the economic reach of vast new markets.

*The existing supply of capital equipment* determines the degree to which the above three influences will affect the marginal efficiency of capital. To the degree that existing plant and machinery is capable of being used to satisfy new or increased demands to that degree new investment *will not follow* from population growth, territorial growth, or technological progress. However, if existing capital is more or less fully employed in meeting current demand, any further expansion of demand (from the aforementioned factors)

will result in new investment. In this same connection, the critical role of inventories must not be overlooked. This is especially true when we try to explain business cycles. Inventories often act as economic shock-absorbers, strongly damping the effects of many sudden shifts in demand. At the same time, however, inventory fluctuations are also a major source of instability, often providing the explanation of the  $3\frac{1}{2}$ -year minor business cycles. The role of inventory movements in business cycles is discussed at length in Chapter 9.

### *Short-run Influences on the Marginal Efficiency of Capital*

In the analysis of business cycles, *short-run* changes in the marginal efficiency of capital are of great importance to the ups and downs of the economy. It will be observed that some of the short-run influences mentioned have already been discussed in connection with the propensity to consume. This need not evoke surprise, for a given influence may be of the two-edged variety—influencing both consumption and investment.

*Short-run expectations* as to future movements of costs, general prices, and demand are very important. An anticipated rise in costs, fall in the price level, fall in the demand for his product, or a combination of these things, will reduce the average businessman's expectation of the rate of return from any given investment. Conversely, investment will be stimulated if the producer anticipates a fall in costs, rise in prices, rise in demand, or a combination of these.

The significance of *short-run shifts in the propensity to consume* becomes self-evident when we recall that the demand for capital goods is at least partly derived from the demand for consumer goods. Hence, short-run shifts in the consumption function will, more or less, be followed by related movements in investment.

*Liquid assets and changes therein* influence to a considerable extent the investment decisions of businessmen. Members of the business community are dominated by what has been called a "liquidity-solvency motive." The fear of bankruptcy and, even more important, the fear of temporary illiquidity (shortage of working capital) often act to inhibit a new investment. On the other hand, when the businessman knows his liquid assets to be large in volume



(and his financial position therefore to be a strong one), *ceteris paribus*, he is apt to say "yes" to any given investment opportunity.

*Sudden recent shifts in income* arising through windfall profits or losses, tax allowances or levies, etc., also exert temporary influence upon the marginal efficiency of capital. A recent, sudden rise (fall) in profits because of rapid rise (fall) in prices relative to costs will exert a similar influence.

*Current rates of return* on existing investments affect (perhaps disproportionately) business expectations. Businessmen often work on the assumption that the existing state of affairs will continue indefinitely, except insofar as they have definite reasons for anticipating a change. This is really a mode of convenience—a sort of rule of thumb—but it is not altogether unreasonable. For it is rather foolish to base expectations *entirely* on a future course of events about which we are so uncertain. Hence there is a tendency to project existing rates of return into the future, rather than to formulate entirely new expectations as to future rates of return.

Finally, but of considerable importance, are what may be called *waves of optimism and pessimism*. These are themselves products of the uncertainty and lack of sure knowledge which we mentioned above. Aware of their own deficiencies of judgment, businessmen turn to an examination of the opinions and anticipations of their equally uncertain fellows. This results, as one would expect, in periods of extreme exultation or deep despair. The natural consequence is that during periods of optimism rates of return on future investments are badly overestimated, while during periods of pessimism they are just as badly underestimated.

### ***The Marginal Efficiency of Capital and the Rate of Interest***

Little will be said about the rate of interest at this juncture. A thorough development of the theory of interest will be undertaken at a later point. Let it suffice to say here that the interest rate is the price paid for the use of loanable funds and is determined, like any other price, by supply and demand—in this case, the supply of and the demand for loanable funds.<sup>12</sup>

<sup>12</sup> A detailed discussion of the theory of interest is presented in Chapter 4, pp. 139–146 and 179–184.

Earlier it was noted that the level of investment is determined by the relationship between the rate of interest and the marginal efficiency of capital, being determined when the two are equal. Let us see what this statement means.

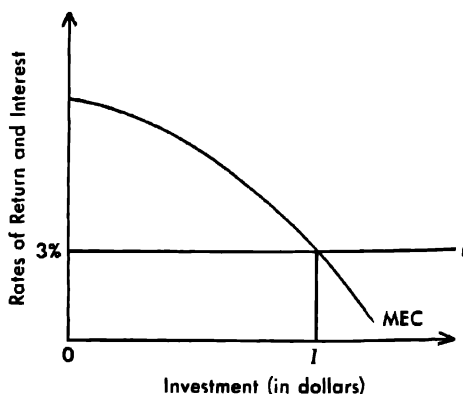


Figure 16. *Determination of Rate of Investment: Where Marginal Efficiency of Capital Equals Rate of Interest*

Returning to the illustration used in the discussion of the marginal efficiency of capital, we observe that the annual anticipated net yield (before interest charges) on the contemplated investment was 5 per cent. If the producer had to pay interest at 3 per cent per annum on \$100,000 borrowed funds, it would surely pay him to invest, for he would make a pure profit of \$2,000 (\$5,000 — \$3,000) per year. Similarly, suppose an additional \$100,000 of investment yielded a return (net of all but interest costs) of \$4,000 (i.e., 4 per cent). As long as he had only to pay \$3,000 as interest for the additional \$100,000 (3 per cent), the producer would continue to invest, for he would still make a pure profit of \$1,000 per year. Where the anticipated rate of return (marginal efficiency of capital) equaled the rate of interest, the entrepreneur would stop investing. This sequence of analysis is illustrated in Figure 16.

In Figure 16, the marginal efficiency of capital is represented by the *MEC* curve, the interest rate by the line *i*. The latter is taken to be fixed at the value of 3 per cent, regardless of the amount borrowed by this particular firm. This is in accord with the facts,

for no individual firm borrows enough in the capital market to influence the rates of interest, although it may find its borrowing capacity limited. The marginal efficiency of capital is presented as a *schedule*, showing that as additional investments are made, the

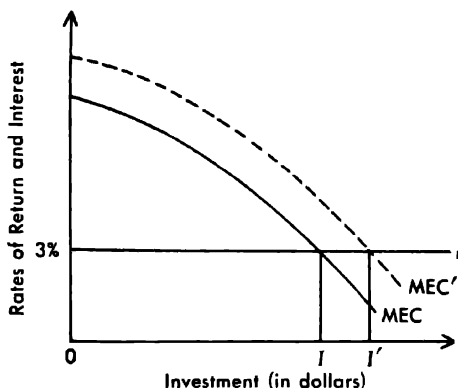


**Figure 17. Increase in Investment: Rise in Marginal Efficiency of Capital with Constant Rate of Interest**

anticipated rate of return of each is lower than that accruing to the one immediately preceding it. This last fact follows from the law of diminishing productivity, the rise in factor prices as more of them are employed, and the laws of market demand for the final product. In accordance with our analysis, the level of investment is  $OI$ , for at this amount the anticipated rate of return (marginal efficiency of capital) for the last unit of investment is equal to the market rate of interest.

It follows from the above analysis that a change in the marginal efficiency of capital or in the rate of interest, or in both, should induce a change in the level of investment. Two limiting cases are illustrated in Figures 17 and 18. In Figure 17, above, a rise in the marginal efficiency of capital is accompanied by a constant rate of interest. The reader will observe that this results in an increase in the level of investment. This is precisely what we would expect, for an upward shift in the schedule of the marginal efficiency of capital means that the anticipated rate of return at each level of investment is higher than before. Thus investment projects, hereto-

fore unprofitable at going rates of interest, now command a sufficient rate of return to pay the interest charges on funds borrowed to finance them.

Figure 18 graphically describes the case of a rise in the rate of

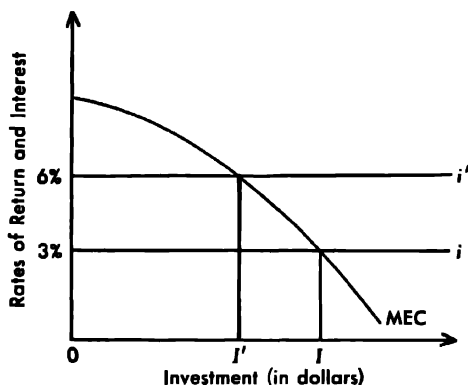


*Figure 18. Decline in Investment: Rise in Interest Rate with Constant Marginal Efficiency of Capital*

interest, with no change in the marginal efficiency of capital schedule. In this case the level of investment falls. Again this is what we should expect: A rise in the rate of interest means that investment outlets whose anticipated rates of return heretofore were sufficient to cover the interest charges on borrowed funds are now considered unprofitable, because they continue to yield the same return in the face of higher interest rates.

By drawing figures for himself, the student will be able to see that investment will also rise if the rate of interest declines in the face of a stable marginal efficiency of capital, or if the marginal efficiency of capital rises faster than the rate of interest rises. Conversely, investment will decline if the marginal efficiency of capital falls as the rate of interest remains constant, or if the marginal efficiency of capital falls at a faster rate than that at which the rate of interest falls.<sup>13</sup>

<sup>13</sup> In this connection, the student should note that the interest rate and changes therein will always influence investment decisions, even if the businessman need not borrow his investment funds. The businessman who has sufficient

**THE ACTUAL DETERMINATION OF NATIONAL INCOME**

Having analyzed the nature of the concepts propensity to consume (and its complement, the propensity to save) and investment, we are prepared to discuss exactly what is meant by the statement that national income is *determined* by the nation's propensity to consume and the level of investment.

***The Propensity to Consume and Investment***

Let us begin by supposing that the schedules of the marginal efficiency of capital and the rate of interest are such that they are brought into equality at a level of investment of 35 billion dollars. Moreover, let us assume that the propensity to consume of the nation is that given earlier in Table 1. (For convenience, this schedule is reproduced in Table 3.)

**Table 3    *The Propensity to Consume***

(in billions of dollars)

| <i>National Income</i> | <i>Consumption</i> |
|------------------------|--------------------|
| 50                     | 60                 |
| 100                    | 100                |
| 150                    | 135                |
| 200                    | 165                |
| 250                    | 190                |
| 300                    | 205                |

We have learned that national income is equal to the sums of money spent on consumption and investment. With this in mind, let us see what the national income would actually turn out to be, given the above propensity to consume schedule and the assumed level of investment of 35 billion dollars. With investment running at the rate of 35 billion dollars a year, it is obvious that national income could not be 100 billion dollars a year. At that level, according to Table 3, consumption would be at an annual rate of

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liquid reserves to finance his contemplated investment will compare the return expected from the investment with the return possible through lending the money at current rates. Obviously, if the marginal efficiency of capital is equal to the rate of interest, he will lend—thereby getting the same rate of return on his money—capital without having the bother of buying and using new capital equipment.

100 billion dollars, so that this level of consumption plus the assumed rate of investment of 35 billion dollars would give an annual national income of 135 billion dollars. Pursuing the same line of reasoning, we can see that national income cannot be 250 billion

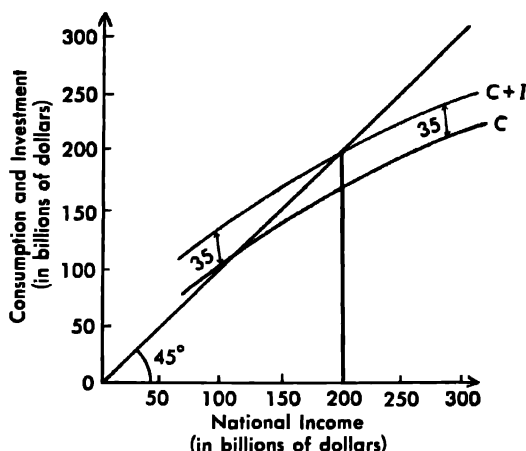


*Figure 19. Determination of National Income with Consumption and Investment Schedules*

dollars per annum, either. The propensity to consume indicates that consumption would run at the rate of 190 billion dollars, which if added to the 35 billion dollars of assumed investment would total only 225 billion dollars. By similar techniques we find that with the given propensity to consume and the assumed 35-billion-dollar level of investment, the only national income consistent with these assumptions is 200 billion dollars. At this level, consumption would amount to 165 billion dollars, and this added to the 35 billion dollars of investment gives a total of 200 billion dollars.

The reader may be better able to see this adjustment of national income to the assumed level of investment and propensity to consume with the aid of a diagram. Figure 19 shows diagrammatically the attainment of the equilibrium level of income just described. In this diagram we have superimposed the level of investment on the propensity to consume, simply by adding 35 billion dollars to

each point on the latter. We may call the resulting curve ( $C + I$ ) the propensity to spend (on consumption and investment) or the spendings function. In accordance with the above analysis, the diagram shows that the equilibrium national income will be at the level of 200 billion dollars, for only at this level of income will the combined consumption and investment schedule, the propensity to spend ( $C + I$ ), intersect the  $45^\circ$  bench mark line. The equilibrium level of national income is given at this point of intersection because any point on the  $45^\circ$  line represents perfect equality between national income as given on the horizontal axis and the sum of expenditures on investment and consumption indicated on the vertical axis; hence it conforms perfectly with our earlier analysis that national income is equal to the dollar values spent on consumption and investment.

### *The Propensity to Save and Investment*

A second way of demonstrating how national income is determined is by use of the concepts propensity to save and investment. Specifically, we are able to say that national income is determined by the propensity to save and the level of investment, *i.e.*, by the intersection of these two schedules. It is the writer's opinion that this approach may enable the student to understand the nature of national income equilibrium better than the method just discussed (even though they are obviously closely related and yield identical results), if for no other reason than the fact that it has already been shown that income stability is contingent upon equality of current savings and investment. Again, we may resort to the propensity to save schedule used earlier in Table 2 and reproduced below.

**Table 4** *The Propensity to Save*  
(in billions of dollars)

| <i>National Income</i> | <i>Saving</i> |
|------------------------|---------------|
| 50                     | + 10          |
| 100                    | 0             |
| 150                    | + 15          |
| 200                    | + 35          |
| 250                    | + 60          |
| 300                    | + 95          |

We have learned that national income will be stable so long as current savings *equal* current investment. Keeping this in front of us, let us find out what the national income actually would be were the above propensity-to-save schedule the existing one and the level

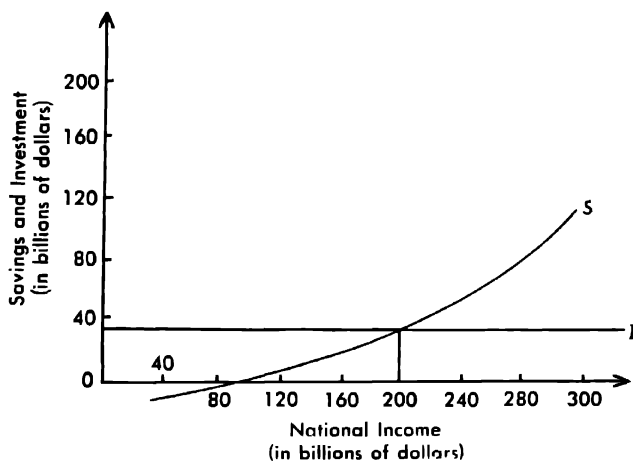


**Figure 20. Determination of National Income with Savings and Investment Schedules**

of investment again 35 billion dollars. With investment running at an annual rate of 35 billion dollars, only a cursory glance at the propensity-to-save schedule is needed to show that savings and investment are equal only at the income level of 200 billion dollars. If income were to run at a higher rate, savings would exceed investment, and we already know that when such a condition prevails, income will tend to fall, until savings are reduced to a point of equality with investment. Similarly, were income to fall below 200 billion dollars, the propensity-to-save schedule shows that the 35-billion-dollar rate of investment would exceed the rate of savings forthcoming at any of these lower levels of income. Hence the national income would tend to rise, raising with it the rate of savings, until the latter is equated with the annual rate of investment.

It is again possible to demonstrate this analysis graphically, as is done in Figure 20. In this diagram the propensity to save is



represented by the curve labeled *S*, and the assumed level of investment by the line *I*. The two intersect at a level of income equal to 200 billion dollars, the figure obtained in our literary analysis. And, as before, given these two schedules, this is the only income which can be the equilibrium level: that is, the one where stability obtains. Examining the diagram, we observe that any income to the right of (higher than) 200 billion dollars will result in an excess of savings over investment, and income will decline. Any income to the left of the point of intersection will produce the reverse situation. Thus, we can conclude that, given the schedules of saving and investment, national income will always tend toward the equilibrium as indicated by the intersection of these two curves.

One further point is worthy of note. There is nothing sacrosanct about any given propensity-to-save (or its complement, the propensity-to-consume) schedule or any given level of investment. The equilibrium level of income will tend to be higher (lower) the lower (higher) the propensity to save, or the higher (lower) the propensity to consume, given the same level of investment. Likewise, income will be higher (lower) the higher (lower) the level of investment. The student can test the validity of these statements himself by moving the schedules around in the manner indicated.

#### REAL VERSUS MONEY NATIONAL INCOME

So far the discussion of national income has proceeded solely in terms of *money* income. It is now time to examine the effects on *real* national income of fluctuations in money income. Perhaps this issue can be sharpened by asking: Precisely what are the effects on production and the employment of resources of disparities between savings and investment?

First, let us examine exactly what is involved when, for example, savings exceed investment. This state of affairs simply resolves itself into the situation where businessmen are getting back less than the costs which they paid out in producing the various consumer and capital goods. The costs of production are the incomes of the various factors of production. If these latter would spend all their incomes, this would suffice to remove the currently produced consumer and investment goods. If they fail to spend all

current income (hoard, repay bank debts, etc.), precisely to this extent will producers find inventories piling up on them *involuntarily*. In other words, businessmen find aggregate monetary demand insufficient to justify a continuance of their current level of output. They will, therefore, tend to curtail output and employment, so that the fall in national money income is accompanied by a fall in national *real* income. If the businessmen cut prices (or if the general price level falls), the inventories might not pile up. But production plans would still be revised downward and the end result would be the same.

What will happen to real national income when investment exceeds savings depends primarily on the *level of employment*. Where investment is greater than savings, the aggregate effective demand for currently produced consumer and investment goods is greater than businessmen have anticipated. In fact, this situation means they are getting back more than they paid out as costs of production (by the amount of the excess of investment over savings) so that profits are greater than they anticipated. If there is sufficient unemployment of resources, this rise in money income will be accompanied by an important increase in production and employment and so in *real* income. As the economy approaches closer and closer to full employment of its resources, however, a continued rise in national money income will manifest itself more and more in the form of rising prices and less and less in the form of rising production.

There remains to be discussed the effects on real income where money income tends to be in relatively stable equilibrium. Here the crucial point is the level of output. If this remains constant, along with the constant rate of expenditures, the economy should move along unchanged. But if output increases, particularly as a result of increased employment of factors of production, and not as a result of technological advances, certain depressive influences will make themselves felt. This derives from the fact that if the rate of total expenditure remains unchanged, the increased quantities of goods can only be sold at lower prices. Unless a proportionate reduction in factor prices is effected, the price decline *may* act as a depressive influence on production and employment. Again, the

modern economy exhibits commodity and factor price rigidities for various reasons (mainly because of trade union activities, the contractual nature of many other obligations, and the presence of monopoly elements in industry), and these may tend to accentuate the depressive effects of falling prices.<sup>14</sup>

One final point must be mentioned before we bring this discussion to a close. Although national income is in equilibrium where the propensity to save and investment schedules intersect, under no circumstances is this equilibrium of money national income to be construed as one which is characterized by full employment of a nation's resources. This point was more or less implicit in the discussion of the relationships between changes in money and real income. Savings and investment may be brought into equality at a level of national income far below that required for full employment, if the propensity to consume or investment schedules, or both, are low enough. Conversely, equilibrium may be achieved at a level of money income in excess of that required for full employment of a nation's resources. This situation would result from a very high consumption function or level of investment, or both. In such a case, the economy would be confronted with persistent inflationary pressures.

If a gap exists between the savings and investment schedules to the *right* of the full employment income, with the savings schedule lying *below* the investment schedule, this gap is called the "inflationary gap." Any tendency for the national income to approach the full employment level immediately creates forces to push the national income up again, above the full employment level. The forces, of course, are the excess of investment over savings. If, to the *left* of the full employment level of income, a gap exists between savings and investment, with the savings schedule lying *above* the investment schedule, such a gap is known as the "deflationary gap." Any tendency for the national income to approach the full employment level in this case produces forces which bring the national

<sup>14</sup> The precise effect of a reduction in factor prices, particularly wage rates, is actually very doubtful. The pros and cons of wage-rate reductions in times of depressed business activity will be discussed at some length in Chapters 4 and 13.

income down again below the full employment level. And, in this case, the forces referred to are the excess of savings over investment at the full employment income.

Inflationary and deflationary gaps are simply expressions used to indicate the fact that the equilibrium level of income lies above the full employment level in the case of the former and below the full employment level in the case of the latter.

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## CHAPTER 3

### **FLUCTUATIONS IN NATIONAL INCOME: THE MULTIPLIER AND ACCELERATION PRINCIPLES**

#### **THE MULTIPLIER**

Chapter 2 was devoted to a demonstration of the fact that national income was determined by the propensity to consume and the rate of investment. The propensity to consume being given, an increase in the rate of investment resulted in an increase in the national income.<sup>1</sup> It is possible to demonstrate, however, that an increase in investment financed by the creation of bank credit will raise the national income *not* by an equal amount, but by a *multiple* of the increment in investment. The *multiplier* is the name given to the numerical coefficient which indicates the increase in income which will result in response to the increase in investment. In its essence, the multiplier is a *ratio* expressing the quantitative relation-

<sup>1</sup> The ensuing discussion will proceed in terms of *increases* in investment and national income. The reader should be aware, however, that whatever is said of increases applies with equal validity to *decreases* in investment and income.

It might be worth while further to note explicitly that all increments in investment, if they are to induce increases in national income, must be taken to be financed out of the creation of *new* money, presumably bank credit. As we saw early in the discussion in Chapter 2, investment that is financed out of current savings serves merely to maintain national income at the same level as existed in the previous income period. The only time that investments resulted in a rise in national income was during those periods that it exceeded current savings, and thus involved an injection of new money into the income stream. Hence *all ensuing references to income-inducing increments in investment are meant to imply to the reader the injection of new money into the income stream; that is to say, they are financed out of the creation of bank credit (or, even, dishoarding).*

ship between the *increase* in national income and the *increase* in investment which induces the rise in income.<sup>2</sup> Thus if investment (private or public) increases by one billion dollars, and the national income rises by three billion dollars, then the multiplier is 3 [thus: (3-billion-dollar increase in income)/(1-billion-dollar increase in investment) = 3]. Similarly, if the increase in income in response to the one-billion-dollar injection of new money is 4 billion dollars, the multiplier  $k$  is 4; if the increase in income is 5 billion dollars,  $k$ , the multiplier, is 5, and so on.

The reader may well wonder whence cometh this magic power of a dollar of investment to induce a rise in income greater than the value of itself. The reason is essentially a simple one. The multiplier effect is merely the result of the fact that people who receive additional money income (in our case, the people, or factors of production, engaged on the new investment project) proceed to respond some part of it on *consumption*. Their expenditures, in turn, become additional income to the factors of production engaged in the production of the commodities they consume. These latter groups also spend some fraction of their new incomes on consumption, and so on. Each new purchase of consumer goods is identical with an increase in the level of consumption. And consumption, we have seen, is one of the component parts (in addition to investment) of the national income.<sup>3</sup> Let us treat this matter somewhat more specifically, with the aid of some numbers.

Suppose there were an increase in investment of \$100. Let us assume, further, that the people engaged on this new investment project spend *one half* of their new income on consumption. As we

<sup>2</sup> Arithmetically, this relationship may be expressed as follows:  $\Delta Y = k \Delta I$ , where  $\Delta$  (delta) stands for increases  $Y$  national income,  $k$  the multiplier, and  $I$  is the symbol for investment. From  $\Delta Y = k \Delta I$ , we get  $k = \Delta Y / \Delta I$ , i.e.,  $k$ , the multiplier, is equal to the ratio of the increase in income to the increase in investment which is responsible for the rise in income.

<sup>3</sup> Symbolically, we can describe this fact in the following manner:  $Y = C + I$ , where  $Y$ , as before, is the symbol for national income,  $C$  is the symbol for consumption; and  $I$  stands for investment. It follows that whatever increases  $C$  increases the national income. If an increment in investment  $\Delta I$  leads to successive increments in consumption by the groups referred to in the text, so that there is an increase in the total rate of consumption  $\Delta C$ , then the increase in income  $\Delta Y$  will be greater than the increase in investment by  $\Delta C$ . We would finally have the equation:  $\Delta Y = \Delta C + \Delta I$ .

noted earlier, their expenditures on consumption mean additional income to the productive agents employed in the consumer goods industries to the extent of \$50 (i.e.,  $\frac{1}{2}$  of the original \$100). Assume that the factors engaged in the production of these consumer goods act as the earlier ones did and increase their consumption expenditures by one half the increase in their incomes. Then 25 additional dollars will be spent on consumption. This, in turn, means 25 dollars of additional income to people engaged in consumer goods production. If they, too, spend one half of the increment in their incomes on consumer goods, then the rate of consumption rises by \$12.50 more, and so on. The reader may recognize that what we have here is an infinite geometric series, of the descending variety, namely  $\$100 + \$50 + \$25 + \$12.50 + \dots + 0$ . The sum of such a series is computed by dividing the first term [the original expenditure of new investment funds (= \$100)] by one minus the common ratio. In the illustration at hand the common ratio was taken to be  $\frac{1}{2}$ . Thus the sum of the series is seen to be \$200. The increase in investment of \$100, because of the successive respending on consumption, caused national income to rise by \$200.

We observed earlier that the multiplier was equal to the ratio of the increase in income to the increase in investment. In this case the ratio is  $\$200/\$100$ ; the multiplier, therefore, is 2. It is possible to compute the multiplier more directly. If we substitute for the value of the first term the number 1, and divide 1 by 1 minus the common ratio we get the value of the multiplier. In our example the common ratio is  $\frac{1}{2}$ , and  $1/(1 - \frac{1}{2}) = 2$ .\*

### *The Marginal Propensity to Consume*

Careful examination of the foregoing reveals that the crucial factor in determining the value of the multiplier,  $k$ , is the value of the common ratio of the geometric series. The larger its value, that is, the closer it approaches unity (1), the greater is the value of

\* We have now come to a new stage in our understanding of the multiplier. We can now compute it directly with the formula:  $k = 1/(1 - r)$ , where  $r$  is the common ratio in the geometric series. Presently, we shall present this formula for the multiplier in a stage one step advanced.

the multiplier. As its value gets smaller, the value of the multiplier declines. Further examination of the ratio indicates that it is the *ratio of the increase in consumption to the increase in income*. To this ratio: (increase in consumption)/(increase in income) we give the name Marginal Propensity to Consume, MPC.<sup>4</sup> The marginal propensity to consume is the numerical *slope* of the propensity to consume. The slope of a curve measures the rate of change of that curve. The slope of the propensity to consume (the *marginal propensity to consume*) measures the rate at which consumption increases as the national income increases. We may illustrate the marginal propensity to consume by referring to Table 5 and Figure 21 below, which are based on Table 3 and Figure 14 in Chapter 2.

Table 5 The Marginal Propensity to Consume

(all amounts in billions of dollars)

| (1)<br>National<br>Income<br>(Y) | (2)<br>Consumption<br>(C) | (3)<br>Changes<br>in Income<br>( $\Delta Y$ ) | (4)<br>Changes in<br>Consumption<br>( $\Delta C$ ) | (5)<br>Marginal<br>Propensity to<br>Consume<br>( $\Delta C/\Delta Y$ ) |
|----------------------------------|---------------------------|-----------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------|
| 50                               | 60                        | ....                                          | ....                                               | ....                                                                   |
| 100                              | 100                       | 50                                            | 40                                                 | $\frac{40}{50} = .80$                                                  |
| 150                              | 135                       | 50                                            | 35                                                 | $\frac{35}{50} = .70$                                                  |
| 200                              | 165                       | 50                                            | 30                                                 | $\frac{30}{50} = .60$                                                  |
| 250                              | 190                       | 50                                            | 25                                                 | $\frac{25}{50} = .50$                                                  |
| 300                              | 205                       | 50                                            | 15                                                 | $\frac{15}{50} = .30$                                                  |

The curve *C* of Figure 21 is the propensity to consume and is derived from columns 1 and 2 of Table 5. The slope (marginal propensity to consume) of this propensity to consume, from the points *a* to *c* on the curve, is measured by the ratio of the vertical distance *cb* to the horizontal distance *ab*, that is, *cb/ab*.<sup>5</sup> Thus, on

<sup>4</sup> Mathematically, (increase in consumption)/(increase in income) is expressed as  $\Delta C/\Delta Y$ . Substituting in the formula for the multiplier given in the footnote on p. 80, we get  $k = 1/(1 - \Delta C/\Delta Y)$ . We are now in a position to say that *k*, the multiplier, varies directly with the value of  $\Delta C/\Delta Y$  (the marginal propensity to consume), which is the common ratio in our geometric series.

<sup>5</sup> The ratio *cb/ab* is equal to  $\Delta C/\Delta Y$  indicated in footnote 4. Thus, mathematically, the marginal propensity to consume (the numerical slope of the propensity to consume) is expressed as  $\Delta C/\Delta Y$ .





the MPC were  $\frac{2}{3}$ , the multiplier would be 3. If the MPC were  $\frac{1}{4}$ , the multiplier would be  $1\frac{1}{3}$ .

It should be clear from the preceding analyses why the value of the multiplier is greater the larger is the value of the marginal propensity to consume. We noted that the multiplier effect of an increment in investment resulted from the successive (though dwindling) respending on consumption out of the increase in income. Whence it follows that the larger the marginal propensity to consume, the larger will be the values of the secondary consumption figures and, therefore, the multiplier.

We have said that if the MPC is  $\frac{1}{2}$ , the multiplier would be 2. This means that an increase in investment of 25 billion dollars should result in an increase in the national income of 50 billion dollars. Let us see if, in fact, this happens. Figure 22, which is a reproduction of Figure 17 in Chapter 2, provides us with a demonstration that this is precisely what does happen.

Figure 22 indicates that when the rate of investment is 35 billion dollars per annum, the equilibrium level of national income is 200 billion dollars, for, as we have seen, it is only at this level of national income that the sum of consumption and investment, as measured on the vertical axis, equals the level of income, as measured along the horizontal axis.<sup>6</sup> Let us now add an additional 25 billion dollars of investment, by drawing a third curve  $C + I + I$  parallel to the  $C + I$  curve, so that the distance between these two curves measures the 25 billion dollar increment of new investment. The reader should note that since all three curves in Figure 22 are parallel, their slopes are equal. We saw that the slope of the curve  $C$  (the propensity to consume) between the points  $a$  and  $c$  was .50 (or  $\frac{1}{2}$ ). It follows from the parallel relationship among the curves that the slope of the  $C + I$  curve between the points  $a$  and  $c$  is also .50.

Now, observation of Figure 22 reveals that if the rate of investment is increased by 25 billion dollars when the national income is 200 billion dollars, the national income rises to 250 billion dollars an increase of 50 billion dollars.<sup>7</sup> This, of course, was to be ex-

<sup>6</sup> See Chapter 2, pp. 70-72.

<sup>7</sup> That is, the new equilibrium level of income is given at the point  $d$ , where the  $C + I + I$  curve intersects the 45° line.

pected. The MPC of .50 between the points *a* and *c* on the  $C + I$  curve means that an increase in investment of 25 billion dollars will induce 25 billion dollars of extra consumption, so that the

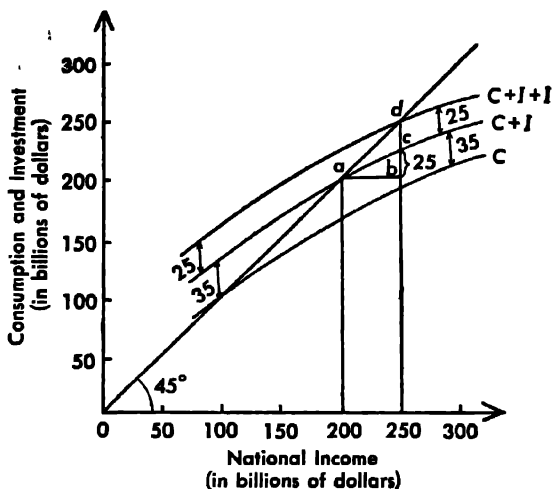


Figure 22. The Multiplier Effects of an Increase in Investment

national income will rise by more than the increase in investment, the difference between the two being equal to the increase in induced consumption.<sup>8</sup>

### The Marginal Propensity to Save

It is possible to compute the value of  $k$ , the multiplier, with the aid of a concept very closely related to the marginal propensity to consume called the *Marginal Propensity to Save*, MPS. The marginal propensity to save is the ratio: (increase in saving)/(increase

<sup>8</sup> The attention of the reader is called to the fact that at low levels of income MPC may be equal to or greater than one, but that at some income level short of the full employment level it *must* be less than one. If the latter were not the case, the economy would be open to explosive oscillations in national income. For with MPC one or more in value, the multiplier would be infinity. This would mean that the smallest increment in investment would lead to a rise in national income of infinity. Before this happened, of course, the economy would break down. Since we know that increases in investment do not give these results, we are in a position to say that, for the economy as a whole, MPC at some point, at least, is less than one in value.

in income). We may illustrate the MPS by referring to Table 6 and Figure 23 below, which are based on Table 4 and Figure 20 of Chapter 2.

**Table 6** *The Marginal Propensity to Save*

(all amounts in billions of dollars)

| (1)<br>National<br>Income<br>(Y) | (2)<br>Saving<br>(S) | (3)<br>Changes in<br>Income<br>( $\Delta Y$ ) | (4)<br>Changes<br>in Saving<br>( $\Delta S$ ) | (5)<br>Marginal Propensity<br>to Save<br>( $\Delta S$ )/( $\Delta Y$ ) |
|----------------------------------|----------------------|-----------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|
| 50                               | - 10                 | ..                                            | ..                                            | ...                                                                    |
| 100                              | 0                    | 50                                            | 10                                            | $10/50 = .20$                                                          |
| 150                              | + 15                 | 50                                            | 15                                            | $15/50 = .30$                                                          |
| 200                              | + 35                 | 50                                            | 20                                            | $20/50 = .40$                                                          |
| 250                              | + 60                 | 50                                            | 25                                            | $25/50 = .50$                                                          |
| 300                              | + 95                 | 50                                            | 35                                            | $35/50 = .70$                                                          |

In a manner analogous to the MPC, the MPS is the slope of the propensity to save, measuring the rate of change of the latter. Thus it measures the rate at which saving increases as the national income increases. The values of the MPS are indicated in column 5 of Table 6, for 50 billion dollars increases in national income. The triangle *acb* in Figure 23 measures the MPS as the national income rises from 200 billion to 250 billion dollars, being, as shown,  $25/50$  or  $.50$  ( $1/2$ ). The reader may ascertain the MPS (for changes in income of 50 billion dollars) in other regions of the curve by drawing triangles similar to that shown in Figure 23. Compare these values with column 5 of Table 6.

Earlier, in Chapter 2, we defined saving as the difference between income and consumption. The propensities to save and to consume were seen to be complements of each other. That is to say, each is the difference between income and the other. From these relationships we can say that the marginal propensity to save is the difference between an increase in income and the increase in consumption out of this additional income, or  $MPS = 1 - MPC$ .<sup>a</sup> Thus if the MPC is  $2/3$ , the MPS is  $1/3$ ; if the MPC is  $1/4$ , the MPS is  $3/4$ , and

<sup>a</sup> Arithmetically, the relationship between MPC and MPS may be shown in the following way:  $S = Y - C$ , where  $S$  is the symbol for saving,  $Y$  income, and  $C$  the symbol for consumption. Now  $\Delta S = \Delta Y - \Delta C$ , where  $\Delta$  is the symbol for small increments. Dividing both sides of this equation by  $\Delta Y$ , we get  $\Delta S/\Delta Y = (1 - \Delta C/\Delta Y)$ ,  $\Delta S/\Delta Y$  standing for the marginal propensity to save.

so on. If the  $MPS = 1 - MPC$ , then we can state the formula for the multiplier as:  $k = 1/MPS$ . In other words, the multiplier is equal to the reciprocal of the marginal propensity to save. Hence if the MPS is  $\frac{1}{3}$ ,  $k = 3$ ; if the MPS is  $\frac{3}{4}$ ,  $k = 1\frac{1}{3}$ , etc. As the mul-

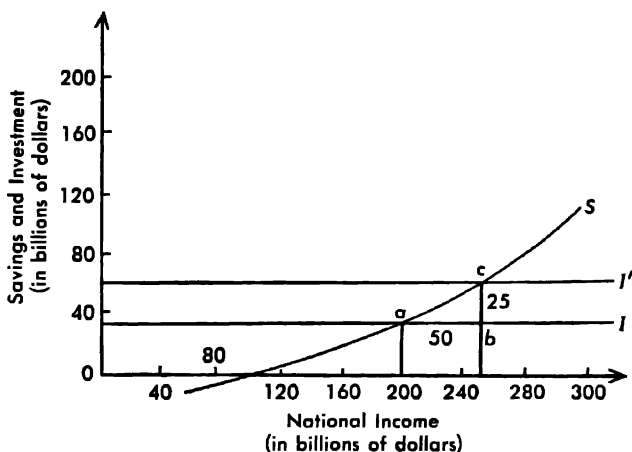


**Figure 23.** *The Multiplier Effects of an Increase in Investment Shown on a Savings and Investment Diagram*

tiplier varied directly with MPC, so now it is to be seen that it varies *inversely* with the MPS.

Assume the MPS to be .50 ( $\frac{1}{2}$ ). The multiplier,  $k$ , is then 2. This means that an increase in the rate of investment of 25 billion dollars should, as before, induce a rise in the national income of 50 billion dollars. We may demonstrate this with the aid of the savings-investment diagram shown in Figure 23. Given the propensity to save,  $S$ , and the rate of investment  $I$  (35 billion dollars), the equilibrium level of income is 200 billion dollars, for that is the only level at which savings and investment are equal.  $I'$  indicates an increase in investment of our assumed 25 billion dollars. With this increment in investment, the equilibrium level of income is seen to rise to 250 billion dollars, a rise of 50 billion dollars. These results accord exactly with those obtained when we used the marginal propensity to *consume* to obtain the multiplier effect. We are

now in a position to say that  $k$ , the multiplier, may be calculated alternatively with the use of the formula:  $1/(1 - MPC)$ , or the formula:  $1/MPS$ .

*Changes in the Position of the Consumption Function  
Also Exert Multiplier Effects*

Changes in the position of the consumption function are analogous in their effects on national income to shifts in the position of the investment schedule. That is to say, shifts in the consumption function, too, give rise to multiplier effects, the product of successive respondings on consumption. We have observed that an upward shift in the propensity to consume will give rise to a higher level of income. As in the case of upward shifts in the investment schedule, moreover, the national income will rise by more than the amount by which the consumption schedule has risen. For changes in the income level brought about by shifts in the consumption function induce further changes in consumption in precisely the same manner as do shifts in the investment schedule. And the (consumption function) induced changes in consumption produce a multiplier effect in precisely the same manner as do the investment-induced changes in consumption.

The multiplier effects of shifts in the propensity to consume may be seen quite readily by referring to Figure 22 in this chapter. Suppose that instead of another investment schedule, we had superimposed another consumption schedule upon the  $C + I$  schedule (the propensity to spend). In other words, assume that the consumption schedule had been raised by 25 billion dollars throughout, instead of the investment schedule. (We might change the  $C + I + I$  curve to read  $C + I + C$ .) This would mean that at each level of income 25 billion dollars more will now be spent on consumption than before. If we start with the equilibrium income of 200 billion dollars, the rise in the consumption function means that at this level, as at all others, 25 billion dollars more will be spent on consumption. Now everything follows as before. The 25 billion dollar upward shift in the consumption function (designated by a curve  $C + I + C$  in place of  $C + I + I$ ) indicates that national income rises from 200 billion to 250 billion dollars in pre-

cisely the same manner as it did in response to the 25 billion dollar shift in the investment schedule.

### LIMITATIONS OF THE MULTIPLIER CONCEPT

The multiplier, as discussed above, actually represents an *ideal*. That is to say, *other things being equal*, the value of the multiplier would be computed as shown in the foregoing discussions. But other things are not always equal, and the multiplier effect may not always be as large as it is when discussed under ideal conditions. We shall now discuss some of the qualifications which should be kept in mind when computing the multiplier as shown above. This will help the reader to gain a better perspective in evaluating the role of the multiplier in the fluctuations of national income.

#### *New Investment Must Be Maintained*

It is necessary to observe, first, that the increments in investment have to be repeated in regular time intervals if the national income is to be raised to the multiplier level and kept there. One injection of new investment will raise the national income to the multiplier value, but as soon as the multiplier effect has worked itself out, *ceteris paribus*, the national income will fall back to its original value. A steady injection of new investment, however, will, after a time, raise the national income to the multiplier level and keep it there. Let us compare these two methods with the use of numbers to illustrate their differences. This is done in Table 7.

In Table 7 a marginal propensity to consume of  $\frac{1}{2}$  (therefore,  $MPS = \frac{1}{2}$ ) is assumed; the multiplier, then, is 2. An injection of \$100 of new investment should raise the national income to \$200. Columns (1) and (2) in the table are based on a *single* injection of \$100 of new investment. Column (1) consists of the increment of new investment plus the secondary expenditures on consumption, each of which is equal to the immediately preceding expenditure (which, as we have seen, becomes someone's income) less the amount saved. Summing column (1) we get the *total* of the increment in new investment plus the successive increments in consumption, which is \$200. However, if nothing else happens, once this multiplier effect works itself out, the national income will

recede to the level existing *prior* to the injection of the \$100 of new investment.

**Table 7** *The Multiplier: Effects of a Single Injection vs. a Steady Injection of New Investment*

| PERIOD | SINGLE INJECTION    |                     | STEADY INJECTION    |                     |
|--------|---------------------|---------------------|---------------------|---------------------|
|        | (1)<br>Amount Spent | (2)<br>Amount Saved | (3)<br>Amount Spent | (4)<br>Amount Saved |
| 1      | \$100               | \$50                | \$100               | \$ 50               |
| 2      | 50                  | 25                  | 150                 | 75                  |
| 3      | 25                  | 12.50               | 175                 | 87.50               |
| 4      | 12.50               | 6.25                | 187.50              | 93.75               |
| 5      | 6.25                | 3.13                | 193.75              | 96.87               |
| 6      | 3.12                | 1.56                | 196.88              | 98.44               |
| 7      | 1.56                | .78                 | 198.44              | 99.22               |
| 8      | .78                 | .39                 | 199.22              | 99.61               |
| 9      | .39                 | .19                 | 199.61              | 99.81               |
| 10     | .20                 | .10                 | 199.80              | 99.90               |
| 11     | .10                 | .05                 | 199.90              | 99.95               |
| 12     | .05                 | .025                | 199.95              | 99.98               |
| ..     | ..                  | ...                 | .....               | .....               |
| ..     | ..                  | ...                 | .....               | .....               |
| ..     | ..                  | ...                 | .....               | .....               |
| ..     | ..                  | ...                 | .....               | .....               |
|        |                     |                     | 200.00              | 100.00              |

If the national income is to *remain* at the \$200 higher level, columns (3) and (4) indicate that the \$100 of new investment has to be *repeated* during the successive income periods, until the multiplier has had time enough to work itself out. Eventually, as seen in (3), the rise in national income resulting from the successive \$100 injections of additional investment will be \$200 *per period*. That is to say, the *steady* injection of \$100 of new investment enables the national income to rise in amount equal to the multiplier value and stay there.

It is to be noted that the amount going into saving in each period gets successively larger, until, finally, it begins to equal (and, if we had carried it through long enough, *would* equal) the increment of new investment being injected in each period. When the amount saved in each period equals the amount of additional investment in each period, each periodic injection of new investment will succeed only in *maintaining* the national income at the



\$200 higher level, and no more. But these injections of new investment have to be maintained to offset the \$100 of savings which are forthcoming when the national income is at its new (\$200 higher) figure (under our assumption that  $MPS = \frac{1}{2}$ ). Failure to do so would result in savings exceeding investment, so that the national income would eventually decline to its former level.<sup>10</sup>

### *Lags and Income Periods*

In the discussion surrounding Table 7 above, the first hint was thrown out of another modifying characteristic of the pure theory of the multiplier as discussed in the first parts of this chapter. As we first discussed the multiplier concept, the impression may have been conveyed that the multiplier effect takes place in an instantaneous fashion. Table 7, however, introduces the concept of *periods*. This is as it should be, for actually there is a time lag (interval) between the receipt of income and the spending of it, and also between the spending and its reappearance as income. Thus consumers who receive additional income are not in the habit of respending the income immediately. This lag is probably fairly short, however. More important is the lag between the receipts from sales by retailers and the producers in the various stages of production and the disbursal of these receipts to the factors of production, for the production processes are time consuming.

We may call the lapse of time between successive expenditures on consumption the *multiplier period*. This is the period of time during which the receipt of new income induces secondary expenditures on consumption. The ultimate effect of an increase in investment depends, we have seen, on the size of the multiplier. The multiplier effect, however, may take *more* than one year to work itself out. If we wish to observe the effect of an increase in investment on the national income, say, for one year, we have to turn to the multiplier period. The greater the length of this period the fewer the secondary expenditures on consumption in any *one* year; hence the smaller the rise in national income in this year.

<sup>10</sup> The discussion of the multiplier carried on earlier in connection with Figures 22 and 23 should now be construed as meaning that the increment of 25 billion dollars of new investment is a continuous one.

Put in other words, the longer the multiplier period the larger the number of years necessary for the multiplier to work itself out.<sup>11</sup>

Once we cease treating the multiplier as a timeless, instantaneous relationship, but instead introduce the element of time intervals between the secondary consumption expenditures, certain interesting problems present themselves. These problems may be summarized under the term "leakages," and it is to these problems that we shall now give our attention.<sup>12</sup>

### *Leakages*

All of the money that potential consumers receive as income may not be spent by them on consumption. We have seen that

<sup>11</sup> The necessity of discussing the multiplier more realistically in terms of time periods, rather than instantaneous adjustments, has led to widespread confusion of the multiplier concept with the concept of the circular, or income, velocity of money. The income velocity of money is the average number of times a dollar makes the rounds from income recipient to income recipient in the course of a year. This value is computed by dividing the national income for a given year by the amount of money in circulation. An income velocity of 4 would thus mean that a complete circuit flow of money from income recipient to income recipient takes, on the average, three months; an income velocity of 2 would mean that six months elapse, on the average, before a dollar spent by one income recipient becomes income to another, that is a dollar, on the average, makes 2 circuits a year from income recipient to income recipient. A multiplier of 2, on the other hand, means that an increase in investment will lead to an increase in the national income of twice the amount of the original investment, but not necessarily within a year.

The differences between the two concepts are rather pronounced. Income velocity is a time concept, relating to consumption per unit of *time*; the multiplier relates to consumption per unit of *income*. Moreover, circuit velocity refers to the average circuit flow of *all* money in circulation, while the multiplier is concerned only with the circulation of additional money reflecting the increment in investment. Thus the multiplier is concerned, in a sense, with the *marginal* velocity of money. Finally, the income velocity would include the amount that is saved out of income in each period; the multiplier ignores these savings.

<sup>12</sup> One problem to which we can give only scant attention in a book of this kind arises out of an assumption which has been implicit in the discussion of the multiplier up until now. We have assumed that the rate of injection of new investment has been *constant*. If the level of investment is, in fact, variable, the rise in national income is not a simple multiple of the increments in investment. However, the longer the time period which is allowed for computing the multiplier effect the more nearly will income be a multiple of (even) a varying level of investment. For a detailed discussion of the treatment of this problem, see R. M. Goodwin, "The Multiplier," in *The New Economics*, S. Harris, ed. (New York, Alfred A. Knopf, 1947), pp. 389-491.

a portion (varying with the MPS) of received incomes may be saved. If these savings are invested, of course, the national income will rise by more than is indicated by the value of the multiplier. We shall examine this possibility in detail when we consider the "acceleration principle" and its relation to the multiplier.

However, the savings may *not* be invested. Consumers may anticipate a fall in prices. They may be pessimistic about their future employment and incomes. Businessmen may be thinking in terms of a low marginal efficiency of capital, and not borrow. Potential lenders of funds for investment purposes may anticipate a rise in interest rates (and thus a decline in capital values, including bond prices), and for this reason prefer to hoard their cash balances rather than lend them.<sup>13</sup> For all these reasons savings may be hoarded, thus providing a "leakage" from the income stream. The use of savings to repay old bank debts will also provide a source of leakage from the income stream. Some part of the new incomes may simply offset payments formerly received as charity or relief payments. Another part of the incomes may be spent on imports, which provide at least a short-run leakage, until the increased imports serve as a stimulus for increased exports. Or if the increased expenditures on investment cause a rise in prices of consumer goods, part of the increased *money* expenditures will be drained off in the form of decreased purchasing power.

All these possible leakages constitute potential diversions from the income stream of the money injections resulting from the expansion of new investment. The new money brought into the income stream by the act of new investment, then, will not necessarily all become secondary income to agents of production, to be respent by them on consumption, etc. Some of it may "leak" away. To the extent that this happens, the multiplier effect of new investment will not be as great as first appeared when we did not take cognizance of leakages. Any attempt at calculating the multiplier effect must take account of these leakages if the estimates are to be at all accurate.

<sup>13</sup> Of course, businessmen who provide themselves with their own capital may utilize sales receipts simply to build up their cash balances or pay off bank debt rather than reinvest them in inventory and capital equipment, etc. A detailed discussion of hoarding may be found in Chapter 4, pp. 139-144.

One other point is worthy of note in this connection. When we speak of the multiplier effects on national income of changes in investment, we are referring to *net* investment. It follows that we must be sure that any act of investment in some sector of the economy is not offset by a *decline* in investment somewhere else in the economy. Such a decline in investment will have a multiplier effect also, so that national income will also decline by more than the fall in investment. Hence an act of investment cannot, alone, be taken as an act of *net* new investment. Such an act of investment may have "unfavorable repercussions" on investment elsewhere

(a) by raising prices of material and labor; (b) by raising the interest rate, because of the method of financing employed; (c) owing to "repercussions" on the psychology of businessmen, when, for example, an increase in the rate of Government investment is financed by a budgetary deficit, shaking the confidence of those who believe government expenditures should be financed along principles of "sound finance"; (d) through unfavorable influences on the international balance of trade and payments.<sup>14</sup>

It is also possible that an act of investment will induce *supplementary* acts of investment, so that in some sense, the original act of investment should not be considered *net* new investment by itself. During a depression, for example, a spurt of investment in some sector of the economy, private as well as public, may well act as a stimulus to further investment elsewhere, by engendering feelings of optimism about the future, and thus raising the marginal efficiency of capital. These additional investments may be considered as having been induced directly by the original acts of investment or indirectly by the secondary *consumption* expenditures induced by the initial acts of investment.

### ***The Possibility of Cyclical Variation in the Marginal Propensity to Consume***

Heretofore, we have assumed that the marginal propensity to consume is constant. If the marginal propensity to consume should

<sup>14</sup> Cf. Haberler, *Prosperity and Depression* (Lake Success and New York, United Nations, 1946), pp. 227-228. The effects on international trade of changes in investment are discussed in Chapter 10.

vary, then, of course, there is nothing stable about the value of the multiplier, such as we may compute from a *given* value of the marginal propensity to consume.

On certain *a priori* grounds we might expect the marginal propensity to consume to vary cyclically in value. This cyclical variation might be traced to such factors as changes in the distribution of income; consumer expectations about future income; perhaps the rate of change of income, a factor which could be a significant influence on consumer expectations; and, also, consumer income of the immediate past, which establishes the standard of living of the various households.

All recipients of income do not have the same marginal propensity to consume or save. Therefore, a change in the distribution of income would be expected to cause some change in the marginal propensity to consume. The major source of change in the distribution of income during the business cycle is fluctuations in profits. Profits and speculative incomes are notoriously the most fluctuating component of national income. During periods of rising national income, profits rise sharply; they also fall sharply in periods of declining income. Business firms, the immediate recipients of profits, ordinarily have much higher marginal propensities to save than households. Those consumer groups who later share in some of the profits in the form of dividends are also known for their comparatively high marginal propensity to save; the holders of shares, of stock are inevitably the high-income groups, the groups whose (marginal and average) propensity to consume is low enough to enable them to save for the purchase of stocks. What has been said of profits applies to speculative incomes as well, for these, too, accrue primarily to business firms and high-income groups.

With the distribution of national income moving in favor of business firms and high-income groups through the upward sweep in profits during periods of cyclically rising national income, we may expect a tendency for the marginal propensity to consume to fall during these periods. On the other hand, there is some reason to believe that the marginal propensity to consume of middle- and low-income households will tend to rise for a limited time in periods

of cyclically rising national income. Exactly when this happens will depend in large part on the length and depth of the preceding depression, for reasons we shall now examine.

Of fundamental importance in determining the amount that consumers will spend out of increments in income are the living standards from which they have fallen during the period of low income. If these groups have been forced by unemployment and/or reduced incomes to lower their living standards well below the plane to which they had grown firmly accustomed in the previous prosperity, we may expect them to spend the bulk of new income on consumption until they regain their predepression living standards. Thereafter, the amount spent out of cyclically rising income (that is, what we may call the short-run marginal propensity to consume) is likely to *fall*, pending adjustments to unprecedented living standards, especially if the rise in national income is rapid.

However, these attempts to regain former living standards are likely to be influenced a great deal by the extent to which consumers have gone into debt during the depression in an effort to minimize the reductions in their living standards. The longer and deeper the depression, the more into debt they are likely to have gone. Coming out of a long period of depressed income, these groups may be forced, for some time, to devote a large portion of increased income to the repayment of debt; such action, of course, will temporarily reduce the value of the marginal propensity to consume. After the debts are repaid, the value of MPC will tend to rise, falling again after previous peak living standards have been reached.

Also playing a large role in determining the amount of additional income that consumers will spend on consumption is their state of expectations. The more optimistic they are about the prospects of the continued maintenance of the source of additional income, *ceteris paribus*, the more they will tend to spend out of the increments in income. These expectations are also likely to be influenced by the duration and depth of the preceding depression and, in addition, by the rate of increase of income, with the degree of optimism about the future tending to vary inversely with the former and directly with the latter. *Ceteris paribus*, we may expect the

value of MPC to rise somewhat in value (for a limited period, of course) as people grow more optimistic about the future.

In periods of declining income we may expect the marginal propensity to consume to tend to fall somewhat in value. The extent to which it does fall will depend on such factors as the amount of savings of consumer units, the length and depth of the downswing and depression, the state of their expectations, and the extent to which they are willing and able to go into debt to maintain their living standards.

With profits and speculative incomes declining most sharply, the distribution of income tends to move somewhat in the direction of groups with lower marginal propensities to save. However, household groups may be expected to resist reductions in their living standards by digging into savings and going into debt.<sup>15</sup> But, there are limits to this line of recourse by consumers. If the national income declines steadily over a prolonged period (or if it falls sharply and remains at comparatively low levels), consumption will eventually drop off sharply (the marginal propensity to consume will get larger), for savings will be exhausted, limits to borrowing will be reached, and households will become increasingly pessimistic about the future. This will be true primarily of consumption of consumer units in the middle- and low-income brackets.

On the basis of the foregoing reasons, we have grounds for believing that the value of the marginal propensity to consume may vary somewhat in the course of cyclical movements of the national income, but probably with time lags. To the extent that it rises, if it does so at all, during cyclical upswings, it will tend to accentuate the multiplier effects of increases in investment over limited portions of the upswing. And to the extent that it rises in value during periods of prolonged depression, the multiplier effects of declines in investment will be greater at later stages of a downswing than they are at early stages.

However, we are not at all sure of the extent to which the marginal propensity to consume rises during periods of upswing in

<sup>15</sup> This means, in effect, that the marginal propensity to consume gets smaller, denoting that a decline in investment will have less of a damping effect on national income.

national income and falls during periods of downswing. After all, we have noted two opposing tendencies. In periods of rising income, upward pressure on the marginal propensity to consume may be expected to result from efforts of low- and middle-income groups to regain predepression living standards. Downward pressure, however, will result from the tendency of the distribution of income to move in favor of business units and high-income groups. We are not at all certain which effect is stronger, and to what extent. The same opposing tendencies are at work during downswings. The swing in income distribution toward the middle- and low-income groups exerts an upward pressure on the marginal propensity to consume, while efforts to maintain living standards tend to reduce its value. In this case, we may expect the latter effect to outweigh the former, if for no other reason than the fact that the favorable redistribution of income helps the lower- and middle-income groups to resist the inroads on their living standards. Again, however, we are at a loss for ways of evaluating the precise movements in the value of this coefficient.

Given the kind of statistical material that is presently available (or lacking), we have no way of determining, in any accurate manner, the nature and extent of the movements in the value of the marginal propensity to consume in the course of the cyclical movements in national income. Moreover, because of the conflicting forces at work on it, the cyclical changes in this value may be very small. On both of these counts the assumption of a constant marginal propensity to consume must be taken as the best approximation to reality available.<sup>16</sup>

One final point should be noted. The multiplier is probably in need of a more sharply defined income period than has been accorded it heretofore. There is some empirical evidence which in-

<sup>16</sup> As often happens when making assumptions, the (methodological) question is not so much whether the assumption is precisely correct, but whether it is a sufficiently good approximation to the facts to be useful. Assumptions are often necessary to reduce a problem to manageable proportions. The most important question to be raised in connection with them is their usefulness in enabling us to arrive at conclusions sufficiently close to reality to enable us to predict. Whatever empirical evidence exists, meager as it is, supports our belief that this is the case with regard to our assumption of stability of the marginal propensity to consume.



dicates that the longer the time period allowed in calculating the propensity to consume, the *flatter* it becomes. Thus a consumption schedule which is plotted for a period of ten years or so displays a tendency to be linear (straight), whereas one plotted for a period of a year or two appears definitely to be curvilinear. These results mean, in effect, that the marginal propensity to consume (the slope of the propensity to consume) changes with varying *time* periods, tending to approach constancy and to be higher in value as the time period over which the propensity to consume is calculated grows longer. Therefore, one may need to bear in mind some specific time period when referring to or attempting to utilize some value of MPC for estimating a value for the multiplier.

### *Conclusions*

The foregoing discussion of certain qualifications to be kept in mind in discussing the multiplier concept should not be construed as meaning that this concept is without valid use. On the contrary, it is of the utmost importance. For it represents an attempt to state in quantitative terms that fluctuations in the rate of investment result in greater than proportional fluctuations in national income and employment. The fact that we cannot always ascertain the value of the multiplier in *exact* terms means only that there are certain limitations in our statistical knowledge. These gaps we can expect future statistical studies to fill. They do not mean that we should ignore this very important relationship between investment and national income. A knowledge of the multiplier turns out to be of vital importance, for example, from the standpoint of public policy. It is important in connection with the role of government investment during the course of the business cycle.<sup>17</sup> If the government, let us say, is desirous of expanding its outlays to fill the

<sup>17</sup> What has been described in the foregoing has been variously called the investment multiplier, the employment multiplier, the money income multiplier, among other terms. Another important application of the multiplier lies in its use in evaluating changes in a nation's balance of foreign trade. Used in this connection, it is called the foreign trade multiplier. This use of the multiplier is discussed in Chapter 10.

All of these uses of the multiplier seek to give quantitative expression to the ultimate cumulative effect on income of increases in money outlays of one kind or another.

gap between the actual level of income and the full employment level, it obviously should not increase its spending by an amount equal to the difference in the two income levels. Cognizance must be taken of multiplier effects. Otherwise, the national income might be pushed up past the full employment level, precipitating the economy into a state of inflation.

### *Note on the Precise Shape of the Consumption Function*

Examination of the consumption function as it has been drawn in this and the preceding chapter indicates that certain assumptions have been made about the shape of the (short-run) propensity to consume. The consumption function in the various diagrams containing it has been assumed to increase at a decreasing rate; in other words, the slope of the function, that is, the marginal propensity to consume, gets smaller as the national income rises. This assumption has, at times, been questioned. Most empirical studies of the consumption function indicate it to be linear, that is, a straight line. However, most of the linearity of the statistical consumption functions probably results from cyclical and secular changes in the (static) consumption function as we have drawn it. Often it is the result of statistical oversimplification. A slightly curvilinear function fits many of its consumption-income time series as well as a straight line.

Perhaps the best generalized theoretical proposition that can be made about the precise shape of the (short-run) consumption function is the following: In the course of recovery from depression incomes, the increases in consumption and income tend to be equal, that is, the marginal propensity to consume approximates unity. This describes the fact of hasty attempts of people to recover their pre-depression living standards. Put more accurately, no lag is necessary for people to adjust to higher incomes, because they already have experienced these incomes in the preceding prosperity. However, once the national income reaches the level attained at the peak of the previous prosperity, we may expect the short run consumption function to decline in slope; in our terminology, we may expect the (short run) marginal propensity to consume to decline in value. This fall in value of the marginal pro-

pensity to consume describes the comparative inability of consumer groups to adjust readily to higher, *unaccustomed* living standards. As the national income, exhibiting the unexploited gains in productivity made in the previous depression, shoots past the income peak of the previous prosperity, we may expect the further increments in consumption to be temporarily less than the increases in income, pending the adjustments to higher living standards. The extent to which the short run marginal propensity to consume will decline will vary directly with the *rate* of growth in the national income. The faster the national income increases, the less time consumers have to adjust to higher living standards.

Of course, the generalization just made is subject to the many qualifications made earlier in the discussion of the cyclical behavior of the marginal propensity to consume. Nonetheless, the present writer believes, that, as a general theoretical proposition, it is as good an approximation to reality as there is, subject to the aforementioned qualifications. At the same time, however, it is likely that the *long-run* consumption function, one which allows time for consumers to adjust to higher levels of income, is probably *linear* and passes through the origin, indicating that consumption and income increase proportionally (though not equally). Given time, people eventually adjust to higher planes of living.

Once full employment is reached, the rate of growth of national income will be slowed down and limited by such factors as the rate of population growth (or labor supply), the rate of technological progress, and the rate of accumulation of capital. A slower rate of growth of national income may well enable consumption to rise proportionately to the growing national income, that is, to rise along the long run, linear consumption function, whose slope (marginal propensity to consume) is apt to be higher than that of the short run consumption function because of the added time allowed to enable people to adjust their living standards upwards. However, when national income declines cyclically (say, because of a decline in investment), consumption will not decline proportionately, that is, along the long run consumption function, but rather will tend to fall *less* than proportionately, along a short run propensity to consume whose slope (MPC) is less than that of the

long run consumption function. This is the product of the aforementioned efforts of households to resist cuts in living standards in the face of falling incomes.

Thus we might say that in the *downswing* phases of the business cycle, the slope (MPC) of the short run consumption function, along which consumption declines in downswing phases, tends to be smaller than that of the long run consumption function. In the initial stages of the cyclical *upswing*, the slope of the short run propensity to consume, along which consumption rises in the early stages of the upswing, may well be *higher* (and even approach unity) in value than that of the long run consumption function, because of the efforts of household groups to regain their pre-depression living standards as quickly as possible. However, if national income shoots past its previous peaks while large amounts of unemployed factors still remain, the rate of growth of national income is likely to be too fast for consumers to adjust to higher, unaccustomed living standards. This means, in effect, that the slope of the short run propensity to consume, along which consumption is temporarily continuing to rise, will fall in value below that of the slope of the long run consumption function. Once full employment is reached, however, the rate of growth of national income will be slowed down considerably. This fact will enable households to adjust their living standards much more easily to their rising incomes; in other words, consumption will now commence to rise along the long run consumption function.<sup>15</sup>

## THE ACCELERATION PRINCIPLE

### *Autonomous and Induced Investment*

The sources of the demand for new capital goods, that is, net investment, should properly be broken down into two categories. The first category is best labeled *autonomous* investment. Autonomous investment is that which is based on the subjective expecta-

<sup>15</sup> For an excellent discussion of short and long run aspects of the consumption function, see James S. Duesenberry, *Income, Saving and the Theory of Consumer Behavior* (Cambridge, Mass., Harvard University Press, 1949), Chapters III, IV, and V. For other material on the same subject, see the references at the end of Chapter 2 in this book.

tions of enterprisers with respect to the dynamic forces of growth. In Chapter 2 we included among the growth factors of an expanding economy such phenomena as population growth, technological progress, future markets, territorial expansion, etc. Investment activity based on these dynamic factors of growth is viewed as autonomous because these factors are themselves *independent* of *current* economic phenomena; in fact, we may say that they largely determine the values of economic variables that *will* be current at some time in the future.<sup>19</sup>

Investment which is based on these growth factors must also be independent of the current state of economic activity. Autonomous investment activity is the type we have assumed in the discussion up to this point. This is evident from the horizontal type investment schedules drawn in all the diagrams showing the determination of national income, both the savings-investment and 45 line ones. The horizontal investment schedules implied that whether the national income was high or low, the rate of investment was the same. Such a relationship between national income and investment, in turn, implies that the rate of investment assumed must have been determined by factors other than the current state of national economic activity; these other factors are the growth factors.

The reader should note, however, that although autonomous investment is not influenced *by* current national income, it is a basic influence on the level of national income itself. This, too, is evident from the national income diagrams. For the investment schedules assumed in these diagrams were, together with the propensities to consume or save, one of the two basic determinants of the equilibrium national income.

Let us examine a couple of examples which illustrate the workings of autonomous investment. The tremendous expansion of railroad building into the western part of the United States from about 1840 until the end of the third quarter of the eighteen hundreds is a good case in point. Here were projects which represented huge sums invested in roadbeds, rails, transport equipment,

<sup>19</sup> However, though the growth factors are independent of the present economy, they do influence it through their effects on the current rate of investment.

terminal building, etc. These enormous amounts of investment were the product primarily of two of the factors of growth, namely, territorial expansion and technological progress. The vast amounts of new territory that were awaiting development in the western part of the United States offered a great inducement to men of imagination to take advantage of the revolutionary technique in transportation which had only recently been developed—the railroad. A second example is to be found in the enormous amount of investment which was embodied in the electric utility and automobile industries during the first quarter or so of the twentieth century. These, of course, were the embodiments of technological developments which permitted the mass production of electricity and automobiles.

The tremendous amounts of investment in railroads in the middle portion of the nineteenth century and in the electric utility and automobile industries in the early part of the twentieth century were obviously the outgrowth of factors which had nothing to do with *current* national income or *current* consumption—this despite the fact that consumption might seem to be the end product of all production. Although all investment projects appear to have consumption sales as their ultimate goal, it is not always fruitful, from the point of view of economic analysis, to link all current investment with consumption which is taking place currently. The connection between the rate of consumption in the western part of the United States and the construction of the railroads into the west in the nineteenth century must have been very tenuous, indeed. These huge investment projects were based, rather, on the subjective estimates of the businessmen involved regarding the development of the west far into the future. As such, they may be properly described as independent, or autonomous, of the level of national income current at the time of their construction. We repeat, however, that while these investment projects are not influenced by current economic activity, nevertheless, they are an important influence on, or determinant of, the current national income itself.

In addition to autonomous investment activity, there is a second category of investment activity which does stem directly from current movements in the national income. Such investment is

described as *induced* investment. That is to say, high national incomes are likely to stimulate investment, low national incomes to damp such activity. The reason is fairly simple. National income, as we have seen, consists of current sales of consumer goods and capital goods, *i.e.*, consumption plus investment. A businessman who invests in capital equipment, whether for consumer goods production or, in the case of capital goods producers, to produce more capital goods, is going to relate his demand for such equipment to his expected level of sales. The *durability* of capital goods makes it imperative that he take account of sales in *future* years as well as those in the present. Because of all the uncertainty attaching to the future, however, the best barometer for estimating future sales is apt to be *current* sales, that is, the current demand for the businessman's product. Hence the higher the national income (the sums spent on consumption and investment), the greater is likely to be the level of induced investment activity.<sup>20</sup> A similar line of reasoning indicates falling national incomes are likely to induce a decline in investment activity. It is the induced category of investment with which the acceleration principle is concerned.

### *Secondary Consumption and Induced Investment*

In the discussion of the multiplier, we spoke of increments in investment and the successive respending of the new money which gave the multiplier effect. The secondary expenditures on consumption, however, may, in and of themselves, induce *further* increments in investment. This follows from the fact, as we have just observed, that the demand for new capital goods on the part of businessmen is, in part, derived from the current demand for consumer goods.

Fluctuations in the demand for consumer goods lead to similar

<sup>20</sup> The reader may be confused by the fact that investment seems to be induced by investment. Thus an increase in that part of national income consisting of investment appears to induce further investment. This sequence of events, however, is a very real one. An increase in the demand for capital goods made upon a producer of capital goods may very well induce him to expand his plant and equipment. The stress upon consumption as the ultimate goal of production has led many writers to overlook the fact that an increase in investment, as well as an increase in consumption, may induce additional investment.

fluctuations in the demand for capital goods. Moreover, changes in the demand for consumer goods result in *magnified* (or accelerated) changes in the demand for capital goods. This fact has come to be described as the Acceleration Principle.<sup>21</sup> It is to an analysis of this principle that we now turn our attention, for without it, as we shall soon see, our analysis of the effects of injections of new money into the national income stream is incomplete.

### *Magnification in the Derived Demand for Capital Goods*

For technological reasons, increases (decreases) in the demand for consumer goods induce very much larger increases (decreases) in the demand for capital goods. In order to understand this "acceleration" effect better, let us resort to a numerical illustration. Assume that in the production of, say, clothing there is a fixed ratio of current production to capital goods equal to 10 per cent (i.e., \$10 of capital goods for every \$1 of clothing production). Assume, further, that there is no excess capacity in the production of clothing; that is, any increase in demand for clothing can be satisfied only by acquiring more capital goods. If the current rate of consumer demand amounts to \$100,000 *per annum*, our assumed ratio of 10 per cent between clothing and the capital goods producing them requires that the stock of capital equipment equal \$1,000,000. If, also, the life span of the capital goods is taken to be ten years, on the average, then the replacement demand for worn out capital equipment is 10 per cent *per annum*, or \$100,000 a year.

Now suppose the demand for clothing increased by 10 per cent, or \$10,000. If the ratio of current production to capital goods is to be kept at 10 per cent, then the stock of capital equipment must also increase proportionately, i.e., by 10 per cent; thus the demand for capital goods must rise by \$100,000. Before the increase in consumer demand for clothing, the demand for capital goods consisted of the \$100,000 replacement demand. To this replacement demand we must now add the additional \$100,000 demand for new

<sup>21</sup> Some authors prefer the term Magnification of Derived Demand. This term is perhaps more descriptive, but the term Acceleration Principle has become such an integral part of the literature on business cycles that we feel constrained to continue its use in this text.



capital equipment for expansion purposes. The demand for capital equipment has doubled. The increase of 10 per cent in the demand for consumer goods has resulted in a magnified (accelerated) increase in the derived demand for capital goods of 100 per cent.

What if the demand for clothing were to *decline* 10 per cent from its original \$100,000 level? This would mean a \$10,000 decline in the demand for finished clothing to \$90,000 *per annum*. In order to maintain the fixed ratio of 10 per cent between current production and the stock of capital goods, the latter would have to be reduced proportionately by 10 per cent also. This may be easily accomplished simply by not replacing the worn-out portion of the capital stock for the current year. But this means a decline in the demand for capital goods to zero. The 10 per cent decline in the demand for the finished clothing has induced a 100 per cent decline in the derived demand for capital goods.

### ***Changes in the Rate of Change of Consumer Demand Induce Fluctuations in the Capital Goods Industries***

Let us pursue this illustration of the acceleration principle one step further. Suppose, in the case of the 10 per cent *increase* in the demand for clothing, that in the next year the demand for clothing continued to increase, but this time only by 5 per cent, or \$5,500. The increased consumer demand will induce a 5 per cent increase in the demand for new capital goods—a \$55,000 increase. Since the 10 per cent replacement demand this year will amount to \$110,000, the total demand for capital goods (for replacement and expansion) this year amounts to \$165,000. But last year the total demand for capital goods amounted to \$200,000. Even though the demand for clothing continued to increase, the derived demand for capital goods *declined*. The reason for this is that the *rate* of increase in the demand for clothing declined—from 10 per cent in the first year to 5 per cent in the next year. Thus a decline in the rate of increase is all that is necessary to induce an *absolute* decline in the derived demand for capital goods.<sup>22</sup>

<sup>22</sup> The same holds true for decreases in consumer demand. A decrease in the *rate* of decline in the demand for consumer goods is sufficient to induce an *increase* in the derived demand for capital goods. Thus in the example

We are now in a position to formulate a statement of the acceleration principle in a more rigorous fashion than has been possible till now. *A change in the rate of change in the demand for consumer goods (not merely a change in the direction) induces a change in the direction of the derived demand for capital goods.*<sup>24</sup> If production in the capital goods industries is not to fluctuate, the change in the *rate* of change (increase or decrease) must at least be *constant*.

The reader may well wonder why this acceleration of the derived demand for capital goods should occur. The reason is primarily a technological one. In order to satisfy an increase in demand for consumer goods in the *present*, it is necessary to invest in durable capital goods which will yield additional amounts of consumer goods only gradually in the future. It is impossible, in many cases, to purchase producer goods which can produce only to satisfy current demand. The significance of the durability of many categories of producer goods is that they are capable of producing for many future periods. In a sense, a durable capital good has a quantity of stored-up producing power which exceeds the amount required of it in the present. But in order to acquire it for current production, payment must also be made for its future productive power, and the total payment must all be made *at once*.

where demand fell 10 per cent from an initial level of \$100,000, we saw the derived demand for capital goods fall to zero, as no capital goods were replaced. Consumer demand would now be \$90,000 *per annum*, and the stock of capital goods would be \$900,000. Now suppose that demand fell by 5 per cent in the second year, to a rate of \$85,500 *per annum*: To maintain the 10 per cent ratio of current production to capital stock, the latter must not be allowed to fall below \$855,000. Hence replacement demand this year must be \$45,000. Thus in this year the demand for capital goods will rise from zero to \$45,000. The decrease in the *rate* of decline in the demand for clothing induced an *increase* in the demand for capital goods.

<sup>24</sup> The attention of the reader is called to the fact that the acceleration principle applies between any two stages of production, not simply between the final consumer goods stage and the capital goods used in their production. An increase in the demand for wool cloth would, for example, induce a magnified increase in the demand for wool yarn. "Slight changes in the demand for consumer goods may thus be converted into violent changes in demand for goods of a higher order; and, as this intensification tends to work through all stages of production, it is quite natural that fluctuations should be most violent in those stages of production which are farthest removed from the sphere of consumption." Haberler, *op. cit.*, p. 88.

Thus it was that a \$10,000 increase in the current demand for clothing necessitated the purchase of \$100,000 of new capital equipment, which, on the basis of the assumed life span of ten years, may be expected to satisfy such \$10,000 rates of demand for a period of *ten* years into the future.

### *The Effect of Durability*

The above point may be illustrated further by referring to the influence of durability on the acceleration effect. It may be demonstrated that the more durable are the capital goods affected by the changes in consumer demand the greater is the magnification of the derived demand for these capital goods. Suppose we had assumed that the life span of the capital goods involved in the clothing example above was twenty years instead of the posited ten years. Then replacement would have proceeded at the rate of 5 per cent of \$50,000 *per annum*. Everything else remaining unchanged, the 10 per cent increase in the demand for consumer, and therefore capital, goods would have caused the demand for capital goods to rise from the \$50,000 replacement demand to a total of \$150,000, an increase of 150 per cent, or 50 per cent greater than was the case when the durability was taken to be ten years. If the durability had been assumed to be one year, so that the entire stock of capital goods of \$1,000,000 had to be replaced annually, there would have been no acceleration effect whatever. The demand for capital goods each year would have been \$1,000,000. The \$10,000 (10 per cent) increase in the demand for consumer goods would have induced a \$100,000 increase in the demand for capital goods. But this \$100,000 increase would now be only 10 per cent of the original demand for capital goods. From these examples, we can see that the greater the durability (and, therefore, the smaller the percentage of capital stock, replaced each year), the greater the acceleration effect of a change in the demand for consumer goods on the derived demand for capital goods.

If we view durability as stored-up productive power, we can see why the acceleration effect varies directly with it. The more durable a capital good is, the larger is the amount of stored-up producing power in excess of the amount required of the capital

good to satisfy the current demand. Hence the larger is the money outlay which must be made to acquire the capital good in the present.

### ***The Acceleration Effect and Durable Consumer Goods***

The acceleration principle applies not only to durable producer goods but also to durable consumer goods. For illustrative purposes, we may turn to houses, although the principle holds for any durable consumer good. Suppose the stock of houses in existence amounted to \$10,000,000. These produce a flow of services (*i.e.*, shelter) amounting to, say, \$500,000. The average life span of the houses may be taken to be twenty years, so that there is a 5 per cent replacement demand for new houses each year; in absolute terms there is a \$500,000 replacement demand *per annum*. Let the demand for houses rise 10 per cent from its present \$500,000 level, or \$50,000. If the assumed 20:1 ratio of houses to housing services is to be maintained, there must be a proportional increase of 10 per cent in the demand for new houses, which is equal to \$1,000,000. Thus the total demand for new houses (including replacement demand) has risen from \$500,000 to \$1,500,000, an increase of 150 per cent. As in the case of producer capital goods, a decline in the rate of increase of the demand for housing service will induce an absolute fall in the demand for houses. All else that was said in connection with durable producer goods applies to durable consumer goods with equal validity.

### ***The Acceleration Principle and Permanent Inventories***

For various reasons businessmen are disposed to hold a certain minimum amount of inventories of raw materials on hand all the time. These commodity stocks usually bear some fixed relation to sales. Whenever there is such a fixed quantity of stocks, a change in the demand for the products into which they enter will induce a magnified change in the demand for the stocks themselves. Let us assume there is a 1:1 ratio of these permanent inventories to sales. Thus if sales ran at the rate of \$100,000 a year, the permanent inventories would amount to \$100,000. It would follow that the replacement demand for inventories would equal sales and also be

\$100,000. If the demand for the finished product rises by \$10,000, that is, 10 per cent, the demand for inventories must rise by \$20,000, or 20 per cent. For the replacement demand for inventories must rise \$10,000, and, in addition, \$10,000 of additional inventories must be ordered for the permanent stocks if these are to be kept at a 1:1 ratio with sales, which are now running at the rate of \$110,000 *per annum*. The smaller the ratio of sales to permanent inventories the greater will be the acceleration effect. Everything said about durable capital goods applies to this case, too, except for one minor qualification. By their nature, commodity stocks are less durable than capital equipment and plant; hence replacement demand cannot be assumed constant for as long periods of time as those usually accorded plant and equipment. Because the replacement demand does fluctuate more readily in response to changes in finished goods demand, these fluctuations reinforce the acceleration effect.

#### **SOME QUALIFICATIONS WITH RESPECT TO APPLICATIONS OF THE ACCELERATION PRINCIPLE**

The illustrative models used above to demonstrate the acceleration principle were somewhat oversimplified. They represent ideals which are realized only if all the assumptions and certain other conditions actually obtain in the world of reality. The necessary conditions do not always exist, however, and as a result, the acceleration effects may not be as large as those indicated in the "ideal" examples.

#### ***The Assumption of a Fixed Ratio of Consumer to Capital Goods***

First, we should note that the acceleration effect is decidedly limited in periods of *declining* demand. A decline in the demand for capital goods (*i.e.*, *disinvestment*) is necessarily limited to replacement. A business enterprise cannot reduce its demand for capital goods below zero; all it can do in response to a fall in the demand for its product is curtail its replacement, and this is limited to zero. Suppose replacement demand amounted to 10 per cent of capital stock, and a decline in demand for the finished product equal to 20 per cent set in. The full working of the acceleration would require that the stock of capital goods should also decline by 20 per cent in order to keep the ratio of consumer to capital goods constant.

But the stock of capital cannot be reduced in any one year by more than the amount of depreciation, which is equal to replacement demand. In this case the decline in the derived demand for capital goods is limited to the 10 per cent replacement demand. The remainder of the 20 per cent decline in the demand for the finished product (equal to 10 per cent) will be absorbed by allowing some of the remaining plant and equipment to lie idle. That is to say, *excess capacity* will be allowed to develop.

Excess capacity, however, was ruled out by the assumption of a *fixed* ratio between consumer goods and capital goods. The very real possibility that excess capacity may develop during periods of recession in business activity forces us to bring the assumption of a fixed ratio of consumer to capital goods to question. Obviously, once excess capacity is allowed to develop, this assumption will not hold. And if it does not, then one of the fundamental premises on which the acceleration principle is based is not true, and the acceleration effect itself will not be realized. For when the demand for consumer goods begins to rise again, there will not be an increase in the derived demand for capital goods until the excess capacity is absorbed.

The fact that excess capacity always does develop during depressions does not mean that the acceleration principle is vitiated as an important factor in the analysis of cyclical fluctuations in the national income, however. The possibility of excess capacity simply warns us that the acceleration principle begins to operate only when the upswing in business activity has proceeded for a time sufficiently long to absorb the excess capacity.

There are other reasons for doubting the accuracy of the assumption of fixity of the ratio of consumer to capital goods. Many increases in consumer demand may be handled by working overtime or adding another shift, and thus using the existing equipment more intensively. Moreover, industries confronted with fluctuating demands are likely to maintain a certain amount of excess capacity as a normal condition. Capacity will be determined in these industries by some *average* demand through a number of time periods. Consequently, excess capacity is likely to exist except during peak periods. Excess capacity is especially likely to be maintained in

light industries, that is, in those industries where capital goods (fixed) costs are a small fraction of total costs. Such overcapacity lessens the dependence of the demand for new capital goods on the *rate* of change in consumer demand.<sup>24</sup>

Somewhat related to the problem of excess capacity in the working of the acceleration principle is the level of employment of all resources in the economy. In order that the increased *demand* for new capital goods be followed by an increase in their *production*, there must be sufficient unemployed factors available for employment in the capital goods industries. That is to say, the capital goods industries must be able to expand to meet the magnified increases in the demand for capital goods. While there is still widespread unemployment, this is possible. But once the economy starts to approach full employment of its resources, the capital goods industries have increasing difficulties in meeting new (accelerated) demands for their goods. As a result, the magnified derived demands for capital goods soon begin to manifest themselves increasingly in the form of higher *prices* for these goods, and less and less in their increased production. Such a state of affairs obviously limits the working of the acceleration effect.<sup>25</sup>

### *Sources of the Increase in Consumer Demand*

Thus far in the discussion of the acceleration principle we have taken for granted the source of the increased demand for consumer goods. It is now time to inquire about the exact source. If the total level of money income remains unchanged, an increase in the demand for clothing can take place only at the expense of the demand for another consumer good. At first glance, it might seem that the magnified increase in the demand for the capital goods involved in clothing production would be completely offset by the

<sup>24</sup> However, excess capacity can also contribute to the acceleration of derived demand. If this overcapacity makes for large *fixed costs*, these will cause large fluctuations in profits, and obviously, profits, both realized and anticipated, greatly influence investment demand.

<sup>25</sup> As a matter of fact it is possible to posit circumstances in times of full employment when an increase in the demand for consumer goods will not only have no effect on the production of capital goods, but actually result in a *decline* in their production. For a discussion of this possibility, see Chapter 6, p. 208, footnote 10.

accelerated *decrease* in the demand for the capital goods producing the consumer goods whose demand has fallen. However, certain factors may intervene to prevent their cancelling out altogether. The acceleration effect in the downward direction, it will be recalled, is always limited to zero; no such limit exists in the upward direction (short of full employment). The rise in the demand for clothing machinery may, then, outweigh the fall in the demand for the commodity from which demand has shifted. This possibility would be reinforced if clothing production entailed the use of more capital goods than did the other commodity, and/or the capital goods in clothing production were more durable. Of course, if the capital goods producing the product whose demand has fallen can be used in the production of clothing, then no acceleration effect at all can take place.<sup>26</sup>

### *Elasticity of the Credit Supply*

Despite these possibilities, there is little doubt that, in most cases, an increase in the demand for a consumer good originating in an expansion of the total money income (*i.e.*, an increase in the aggregate monetary demand) will have a much greater acceleration effect than one involving a mere *shift* in demand from one commodity to another. An expansion in the total (national) money income may originate in an expansion of bank credit or in an act of net dishoarding by the community as a whole. An elastic money supply means a stronger acceleration effect on the derived demand for capital goods, because it removes the possibility of compensating declines in demand for finished products elsewhere.

### *Elastic Credit Supply Needed to Finance New Investment*

While an elastic credit supply may be more or less optional as a basis for the increased demands for finished goods, it is virtually indispensable for financing the accelerated increases in the demand for capital goods. Such an expansion in rate of investment is bound to involve an increase in the demand for investment funds. With an elastic supply of bank credit, the increased demand for

<sup>26</sup> For a fuller discussion of these possibilities, see Haberler, *op. cit.*, pp. 99-100.



loanable funds is easily cared for, and the acceleration effect can work itself out unhampered.

If the banks have difficulty extending new credit, however, the situation is very different. One of two possibilities may follow. The new investment projects will be stopped altogether because of a lack of funds to finance them, in which case the acceleration effect is stopped dead in its tracks. The other possibility is that funds are forthcoming, but only at *rising rates of interest*. These higher interest rates are bound to offset somewhat the rise in the marginal efficiency of capital in those industries the demand for whose products has increased, and thus limit the accelerated increases in their demand for new capital goods. Furthermore, the higher interest rates may cause a retrenchment of investment (disinvestment) in those industries whose marginal efficiency of capital had not been disturbed by any increases in the demand for their products. The decline in investment in these industries may offset, to some extent, the rise in the demand for capital goods elsewhere. We may conclude, then, an elastic supply of bank credit is a *sine qua non* for a smooth working out of the acceleration effect of any significance.

### ***Other Qualifying Factors***

A further point to be noted is that the increase in demand for the final products must be reasonably certain of continuing for some time into the future, and not be of a temporary variety. Durable capital goods are expensive, we have found, because they are capable of yielding products for many time periods into the future. No producer is going to respond to an increase in the demand for his product by ordering more capital goods if he believes this increase is going to be short-lived. For the acceleration principle to make itself felt, therefore, increases in the demand for the finished products must be capable of extrapolation into the future. This point takes on importance by way of emphasizing the fact that the acceleration effect is not merely a technological principle, but is tied up, like all investment, to profit expectations (*i.e.*, the marginal efficiency of capital). This point has been too often overlooked by discussants of the acceleration principle.

Moreover, all consumer goods do not require the same amounts

of capital goods, nor capital goods of the same durability. Hence it is very important to know the *direction* of the increase in consumer demand. Obviously, consumer goods utilizing comparatively large amounts of capital goods will yield a greater acceleration effect as a result of changes in their demand than will those which require smaller amounts of capital goods.

Another qualification concerns an oversimplifying, and somewhat misleading, assumption which has been made in connection with replacement demand for capital goods. In our earlier illustrations of the acceleration principle, it was assumed that some part of newly acquired capital goods would be replaced in the following

For the most part, outside of repairs, the newly acquired capital goods will not need to be replaced for ten years, their assumed life-time. At the end of the ten years, there will be an increase in the level of replacement demand amounting to \$100,000, as these capital goods wear out. If at this time something should happen to the demand for consumer goods to induce a \$100,000 decline in the demand for additional capital goods, the rise in replacement demand would prevent a decline in the *total* demand for capital goods. For this reason, it is not quite right to assert that *any* change in the rate of change of demand for finished products will induce an absolute change in the direction of the demand for capital goods. "It is worthy of note, however, that in each situation (under the conditions assumed) there is one, and only one, state of demand for finished goods—sometimes a rising or falling, sometimes a constant, demand—which will preserve stability in the demand for machines."<sup>28</sup>

However, it is also worthy of note that fluctuations in the demand

<sup>27</sup> Thus on page 106 above, in the illustration showing the effects of a decline in the rate of increase in consumer demand, it was assumed that part of the newly acquired capital goods entered into the replacement demand in the second year, to raise the replacement demand from \$100,000 to \$110,000.

<sup>28</sup> Haberler, *op. cit.*, p. 91. Professor Ragnar Frisch has formulated in precise mathematical form the necessary relationships which must prevail between consumer demand and replacement demand if the total demand for capital goods is to be stable at any given time. See R. Frisch, "The Interrelation between Capital Production and Consumer Taking," *Journal of Political Economy*, XXXIX (October, 1931), p. 646.

for capital goods may also be *accentuated* by variations in the rate of replacement demand itself. During periods of time when the marginal efficiency of capital is low, businessmen tend to slow down in their rates of scrapping of depreciated equipment and plant and keep these in use somewhat longer than originally anticipated. On the other hand, when businessmen are very optimistic and the marginal efficiency of new investment is high, they very often speed up their rates of scrapping, and sell capital goods for salvage ahead of the originally scheduled time, that is, before the capital goods are fully depreciated. These fluctuations in the rate of replacement demand obviously serve to reinforce the acceleration effects, as they were computed earlier on the basis of relatively constant rates of replacement demands.

Our final qualification concerns a word of caution. For all the reasons pointed out in the last few paragraphs, the acceleration coefficient, that is, the ratio of an increase in (induced) investment to an increase in consumption, is not constant throughout the business cycle. Thus, for example, in the very early stages of the upswing, the value of the acceleration coefficient (or, in other words, the amount of net investment induced by a given increase in income or consumption) is likely to be kept relatively small by the widespread existence of excess capacity. In the middle stages of the upswing, the acceleration coefficient will rise in value as excess capacity is absorbed, and additional capacity is needed to meet further increases in income and consumption. As full employment is approached, however, the value of the acceleration coefficient will fall again, for the growing scarcity of the various factors of production acts to prevent real national income and consumption from maintaining the required *rates* of growth. A fall in the rates of growth of income and consumption, it will be remembered, may be sufficient to bring about an absolute fall in the level of investment. In similar fashion, the value of the acceleration coefficient is limited during downswings by the inability of the demand for investment goods to fall below the value of replacement (depreciation) demand. That is to say, the decline in induced investment resulting from a falling national income or level of consumption cannot exceed a figure set by depreciation. A decline in consump-

tion which is greater than the depreciation figure simply gives rise to excess, idle capacity.

### *Concluding Remarks on the Acceleration Principle*

The foregoing qualifications indicate that attempts to apply the very simplified models used to illustrate the mechanics of the acceleration principle would give entirely misleading (usually too large) results. The assumptions of a fixed ratio of consumer to capital goods, of no excess capacity, of a constant replacement demand, etc., are lacking in realism. Replacement demand fluctuates; varying degrees of excess capacity exist most of the time; all consumer goods do not require the same amount of capital goods for their production; the ratio of consumer to capital goods is capable of being varied; producers may not all respond to increases in the demand for their products in the same manner. Some may order more capital goods than others, depending on their relative states of optimism, etc. More realistic assumptions would virtually all lead to a sharp *downward* revision of the acceleration effects derived under the simplifying assumptions. On the basis of certain statistical evidence, it is probable that increases in the derived demand for capital goods amount to no *more* than twice the value of increases in the demand for consumer goods. This value is considerably less than the 1:10 and 1:20 ratios between increases in the demand for consumer goods and the resulting increases in the derived demand for capital goods posited in some of the illustrative models used earlier. In fact, a little later on, we shall be able to demonstrate that if this ratio exceeds 1:3, certain explosive effects would follow, which would lead the economy into a state of hyperinflation.

The acceleration principle helps to shed some light on one of the most widely observed characteristics of business cycles. Economists for some years have noted the fact that durable goods industries (both capital and consumer) fluctuate much more violently during the course of the business cycle than do nondurable goods industries. This phenomenon could be accounted for, in part, by the acceleration principle. Examination of this principle has shown that changes in the demand for nondurable goods and services will

often give rise to much larger changes in the demand for the capital goods which are used in their production.

Some economists also feel that it is possible to observe a tendency for capital goods industries to *lead* (precede) other categories of industry in the course of both the upturn of business activity from depressions and the downturn of activity from periods of prosperity. While there is some question on this state of affairs, it is possible to advance such a possibility on *a priori* grounds, by referring to the acceleration principle. The outstanding fact about this principle is that production in the capital goods industries will change absolute direction merely as a result of a change in the *rate* of change in consumer demand, and not only as a result of a change in the direction of consumer demand. During the course of an upswing in the economy, then, a decrease in the rate of increase of consumer demand is sufficient to induce a decline in the absolute level of production in the capital goods industries. Thus although the consumer goods industries may still be *expanding*, a downturn will set in in the level of output of the capital goods industries. The opposite situation may appear during the course of upturns. Because of the widespread existence of excess capacity in the latter case, however, the likelihood of capital goods industries' leading the others at the upturn is considerably diminished.

#### INTERACTION OF THE MULTIPLIER AND ACCELERATION EFFECTS <sup>20</sup>

##### *The Relation*

Our examination of the acceleration principle suggests that confining our analysis of the effects on national income of increments of investment to the multiplier effect is somewhat misleading and incomplete. For the acceleration principle suggests that the secondary expenditures on *consumption*, which give rise to the multiplier effect, may themselves induce further increments in *investment*, and these, in turn, will have multiplier effects because they, too, lead to

<sup>20</sup> The ensuing analysis is based on the noted article by P. A. Samuelson, "Interactions between the Multiplier Analysis and the Principle of Acceleration," *The Review of Economic Statistics*, XXI (May, 1939), pp. 75-78. See also, *idem*, "A Synthesis of the Principle of Acceleration and the Multiplier," *The Journal of Political Economy*, XLVII (December, 1939), pp. 786-797.

secondary consumption, and so on. The ratio between a net increase in consumption and the investment induced by this increase in consumption has come to be known as the "relation" (or acceleration coefficient).<sup>30</sup>

Unless we take account of the additional investment induced by the successive respending on consumption of the original investment funds, that is, unless we take account of the relation as well as the multiplier effect, it is evident that our analysis of the effects of autonomous increases in investment on national income is incomplete. This fact will be emphasized if the reader will recall that we treated *all* savings in the multiplier analysis as leakages from the national income stream. It is obvious, however, that that portion of savings which might be used to finance new investment should not be excluded from the income stream, for invested savings are very much a part of the national income. Since invested savings were excluded from the multiplier analysis, it is possible to consider them as a source of loanable funds with which the induced investment may be financed.<sup>31</sup> By combining the multiplier effect with the relation we will be in a position to estimate more accurately the total effect on national income of the original (autonomous) increases in investment.

### *Combining the Multiplier and the Relation*

This process of combining the multiplier and the relation may be achieved by making the total increment in national income con-

<sup>30</sup> The "relation" is simply another way of expressing the *acceleration* effect. The acceleration effect, or relation, is, after all, a ratio, just as the multiplier is. The relation may be written as follows: (increase in investment)/(increase in consumption). Thus in the first illustration under the acceleration principle, the relation was  $(\$100,000 \text{ increase in clothing equipment})/(\$10,000 \text{ increase in clothing demand}) = 10$ ; in the durable consumer goods illustration the relation was  $(\$1,000,000 \text{ increase in housing investment})/(\$50,000 \text{ increase in housing demand}) = 20$ , and so on. These values of the relation, it will be recalled, were found to be too high. In the real world the relation is probably somewhere between 1 and 2, depending on the phase of the business cycle in which the economy happens to be.

<sup>31</sup> Of course, once these savings of the multiplier are exhausted, bank credit may be extended to finance the induced investments. We have seen earlier that if the relation, or acceleration effect, is to be of a significant magnitude, it is virtually necessary to finance induced investments from sources outside the income stream, like bank credit or hoarded balances.

sist of (1) the initial increase in investment, (2) the consumption expenditures induced by the increased investment, and (3) proportional increase in investment induced by the increase in consumption. (1) and (2) will be seen to amount to the multiplier effect, while (3) comprises the relation of acceleration effect.

We may observe the effects of combining the multiplier and the relation by referring to Table 8 below. This table assumes a steady injection of new investment of \$100 each income period (financed, of course, from bank credit or hoarded money). The marginal propensity to consume is taken to be  $\frac{1}{2}$ ; that is, the amount of consumption in any period is equal to  $\frac{1}{2}$  the national income of the immediately preceding period. The "relation" of induced investment to increased consumption is assumed to be equal to 1, or unity, *i.e.*, induced investment increases dollar for dollar with increases in consumption.

In Table 8 we observe that in the first period the national income rises by the amount of initial investment only, since there is no consumption induced from previous periods. In the second period, however, \$50 of this increase in national income will be spent on consumption. According to our assumed value of the relation, this should induce \$50 of additional investment. If to these figures we add the \$100 of new (*autonomous*) investment, the total value of national income is seen to be \$100 + \$50 + \$50, or \$200. In the third period, as in all succeeding periods, also, national income is seen to be the sum of the amounts spent on consumption (equal to  $\frac{1}{2}$  the national income of the previous period), the *induced* investment (equal to the amount spent on consumption in the same period), and the \$100 steady injection of (*autonomous*) new investment. If the reader will compare Table 8 with Table 7, he will discover some interesting results. Table 8 may be seen to be Table 7 with the relation superimposed on the latter. In Table 7 we observe that the multiplier effect by itself causes the national income to rise slowly to a \$200 higher level and then maintain itself there, provided, of course, the autonomous injection of new investment is continued. When the relation is introduced, however, the national income is seen to rise to the \$200 level very much more quickly. But close scrutiny of Table 8 reveals something in addi-

tion to this phenomenon. With a value of the relation of *unity*, the national income fluctuates *around* the income figure of \$200, which was obtained *without* the relation or acceleration effect. Furthermore, the fluctuations of the national income become increasingly narrow, approaching \$200 as an asymptote. In other words, a relation of unity superimposed on the multiplier effect does not at all affect the ultimate level of national income reached through the multiplier effect alone, but merely causes it to be reached much faster. At the same time, however, it induces fluctuations in the national income around the "multiplier" value, with these fluctuations becoming increasingly damped. The national income finally settles at the level which is the result alone of the multiplier effect of the steady, autonomous injections of new investment. The reason for this is to be seen in the fact that consumption expendi-

**Table 8** *The Total Increase in National Income Resulting from a Steady Injection of \$100 of New Investment When the Marginal Propensity to Consume Equals One Half and the Relation Equals Unity*<sup>12</sup>

| (1)<br>Period | (2)<br>Current<br>New<br>(Autonomous)<br>Investment | (3)<br>Current<br>Consumption<br>Induced<br>by Previous<br>Period's<br>Income | (4)<br>Induced<br>Current<br>Investment<br>Equal to<br>Increment in<br>Current<br>Consumption | (5)<br>Total Rise in<br>National Income,<br>Sum of Columns<br>(2), (3), and (4) |
|---------------|-----------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 1             | \$100                                               | \$ 0.00                                                                       | 0.00                                                                                          | \$100.00                                                                        |
| 2             | 100                                                 | 50.00                                                                         | 50.00                                                                                         | 200.00                                                                          |
| 3             | 100                                                 | 100.00                                                                        | 50.00                                                                                         | 250.00                                                                          |
| 4             | 100                                                 | 125.00                                                                        | 25.00                                                                                         | 250.00                                                                          |
| 5             | 100                                                 | 125.00                                                                        | 0.00                                                                                          | 225.00                                                                          |
| 6             | 100                                                 | 112.50                                                                        | 12.50*                                                                                        | 200.00                                                                          |
| 7             | 100                                                 | 100.00                                                                        | 12.50                                                                                         | 187.50                                                                          |
| 8             | 100                                                 | 93.75                                                                         | 6.25                                                                                          | 187.50                                                                          |
| 9             | 100                                                 | 93.75                                                                         | 0.00                                                                                          | 193.75                                                                          |
| 10            | 100                                                 | 96.875                                                                        | 3.125                                                                                         | 200.00                                                                          |
| 11            | 100                                                 | 100.00                                                                        | 3.125                                                                                         | 203.125                                                                         |
| 12            | 100                                                 | 101.5625                                                                      | 1.5625                                                                                        | 203.125                                                                         |
| 13            | 100                                                 | 101.5625                                                                      | 0.00                                                                                          | 201.5625                                                                        |
| 14            | 100                                                 | 100.78125                                                                     | 0.78125                                                                                       | 200.00                                                                          |

\* The negative value for induced investment should be construed to mean that there is less investment in this particular period for the economy as a whole than there otherwise would have been.

<sup>12</sup> This table is based on a very similar one in Samuelson, *op. cit.*, p. 75.



tures soon begin to *level off* at their new plateau, and with the assumed low value of the relation, the *induced* investments must soon fall off, too. Finally, when consumption levels off altogether, only replacement capital is necessary; no *new* (induced) investment is necessary. This fact is emphasized in Table 8, where it is to be seen that after the fourth period, it is the *autonomous* injections of investment which are virtually maintaining the national income.

Professor Samuelson has shown what the effects on national income are if we assume different values for the marginal propensity to consume and the relation. His results are reproduced in Table 9. Although five selected pairs of values for the marginal propensity to consume and the relation are given, Professor Samuelson's algebraic analysis has demonstrated that these models cover all the *qualitative* types of behavior of national income, even though the quantitative results would obviously differ with the values of these two ratios.

**Table 9** *Model Sequences of National Income for Selected Values of the Marginal Propensity to Consume (a) and the Relation (b) \**

| (1) | (2)<br>$a = .5$<br>$b = 0$ | (3)<br>$a = .5$<br>$b = 1$ | (4)<br>$a = .5$<br>$b = 2$ | (5)<br>$a = .6$<br>$b = 2$ | (6)<br>$a = .8$<br>$b = 4$ |
|-----|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 1   | 100.00                     | 100.00                     | 100.00                     | 100.00                     | 100.00                     |
| 2   | 150.00                     | 200.00                     | 250.00                     | 280.00                     | 500.00                     |
| 3   | 175.00                     | 250.00                     | 375.00                     | 484.00                     | 1780.00                    |
| 4   | 187.50                     | 250.00                     | 412.50                     | 635.20                     | 5620.00                    |
| 5   | 193.75                     | 225.00                     | 343.75                     | 662.56                     | 16984.00                   |
| 6   | 196.88                     | 200.00                     | 203.13                     | 530.37                     | 50052.00                   |
| 7   | 198.44                     | 187.50                     | 91.41                      | 259.59                     | 145959.20                  |
| 8   | 199.22                     | 193.75                     | - 11.72                    | - 69.18                    | 422770.40                  |
| 9   | 199.61                     | 200.00                     | 21.48                      | - 336.03                   | 1224112.16                 |

\* This table is based directly on that of Samuelson's, *op. cit.*, p. 77. However, column 2 has been incorporated into it from Table 8, and his unit has been changed from \$1 to \$100 in order to make the results run in terms parallel to previous analyses. Column 2, it will be observed, is identical with column 3 in Table 7, where MPC was assumed to be  $\frac{1}{2}$ , and the relation was ignored.

The following conclusions with regard to the interaction of the multiplier and acceleration principles may now be drawn: (1) If we take into account only the multiplier effect, *i.e.*, assume the relation to be zero, a steady injection of new investment leads to a

steady rise in national income equal to the value of the injection times the multiplier; (2) with a marginal propensity to consume of  $\frac{1}{2}$ , and in addition, a relation of unity, we got damped oscillations about the income level obtained from the multiplier effect alone; (3) with higher values for the marginal propensity to consume and the relation, the fluctuations in national income occur with increasing amplitude around an average value, the average value being equal to the income level which the national income would attain on the basis of the multiplier effect alone; (4) if we allow the values of the marginal propensity to consume and the relation to go still higher, especially if the latter is allowed to approach 4, we get no oscillations, but get, instead, "explosive" effects, the national income rising constantly and at a rapidly increasing rate. Were these high values for the marginal propensity to consume and the relation to persist, a runaway inflation would be in evidence as soon as full employment began to be approached.

It is on the basis of the evidence in column 6 in Table 9 that the assertion was made earlier that if the relation of induced investment to increased consumption exceeded 3:1 (*i.e.*, 3), autonomous increases in net investment would result in a state of hyperinflation in the economy. Because increases in autonomous investment have not, in the past, resulted in such situations, we may conclude that the relation, on the average, probably does not much exceed 3, and is probably less than this value.

### ***Conclusions on the Interactions of the Multiplier and the Acceleration Effects***

The first conclusion that comes to mind is that the acceleration principle does not play a decisive role in the determination of *ultimate* levels of national income. Its role is that of a catalyst, in that it appears to speed up the rate at which the national income reaches the level indicated by the multiplier effect alone. Also, to the extent that it is important, it appears to be responsible, at least in part, for fluctuations which the national income displays in reaching the level indicated by the multiplier effect alone.

This observation has some very interesting implications. A superficial student of the multiplier and acceleration principles

might conclude that an economy might easily get itself out of a depression or induce continually rising levels of national income, and thus higher standards of living, simply by having a small increase in autonomous investment. This new investment would stimulate consumption, via the multiplier effect, which would then induce further investment. This induced investment would also have a multiplier effect, and the expanded consumption would induce still further investment, and so on. The national income would grow and grow, just like Topsy.

Unfortunately, perhaps, such a possibility is a "great illusion." Our analysis of the interaction of the multiplier and acceleration principles has shown us that, except for high values of the acceleration effect (relation), the acceleration effect does not at all influence the ultimate levels at which the national income finally settles. At best, it can be responsible only for *fluctuations* in the path of movement in national income from one level to another. It is, therefore, *not* possible to raise the national "income to higher and higher levels by the process of lifting yourself by your bootstraps via the interrelation of increased consumption and increased investment in the familiar expansionist process."<sup>33</sup>

Although it is true that the acceleration effect, or relation, cannot, in the *long run*, raise the level of national income, it may have significant *cyclical* effects. And since it is cyclical fluctuations with which we are concerned, it behooves us to examine these effects. Examination of Table 9, we have found, leads to two conclusions. The acceleration effect, first, speeds up the rate at which the national income reaches the level indicated by the value of the multiplier. But more important, from the point of view of business-cycle analysis, is the fact that for those values of the relation which are most conceivable in reality (columns 3, 4, and 5), the acceleration effect also appears to be responsible for fairly rapid declines in national income from the "multiplier" level. This happens even though the autonomous investment injections are maintained. The possibility is thus raised of having national income decline from a

<sup>33</sup> Hansen, *Fiscal Policy and Business Cycles*, pp. 283-284. The reader is referred to Professor Hansen's very interesting discussion of the multiplier and acceleration principles, especially his conclusions on the subject, pp. 283-288.

given level even though new investments, which in the absence of acceleration effects are normally income-creating, are being continued. The reason is that the induced investments at first carry the national income beyond the level that can be maintained, except where the values of the relation are extreme. It is evident, for example, in Table 8 that after the fourth period, the autonomous injections of investment are just *maintaining* the national income, in fact, are actually responsible for keeping it from declining more than it does. Once the national income, or, if you like, *consumption*, begins to level off, we know from our earlier analyses of the acceleration effect, *induced* investment will actually decline; it is this factor which causes the income to decline, even though the autonomous injections are being continued.<sup>41</sup> We may conclude from this analysis that the more effective the acceleration effect is in speeding the rise in national income, the more rapidly will the income fall again from the peak it attains.

One final word of caution is necessary. We have assumed that the values of the multiplier and the relation (acceleration effect) are constants. For small changes in the national income these assumptions are probably quite valid. But when the national income is subject to large changes, the values of the multiplier and the relation undoubtedly change with the level of income. In the case of the relation, we have found it to vary with the degree of excess capacity, elasticity of bank credit, unemployed resources, etc., all of which vary with the national income. Reasons have also been advanced for believing that the marginal propensity to consume also varies cyclically. These factors make actual calculations of total effects of changes in investment extremely difficult, to say the

<sup>41</sup> We might go still further and interpolate that the decline in national income in the face of continuing autonomous injections implies disinvestment, i.e., an absolute decline in replacement demand for capital goods. This is the natural outcome of the excessive *total* investment brought on by the induced investment. Investment is excessive in the sense that it is beyond that necessary to sustain the national income at the level given by the multiplier value of the autonomous injections. As disinvestment proceeds, however, the total stock of capital equipment becomes inadequate to maintain the level of consumption induced by the (continuing) autonomous injections. Induced investment will once more become positive, and the national income will rise upward again. These fluctuations will continue with diminishing amplitude around the level indicated by the multiplier value of the autonomous investment.

least. Nevertheless, these practical difficulties should not blind us to the importance of the multiplier and acceleration principles for cyclical fluctuations in national income.<sup>45</sup>

The foregoing discussion of the interaction of the multiplier and acceleration principles has, along with other similar models, shown the way to an advanced stage in our conceptions of the nature of cyclical processes. As will be observed in the discussion of the various business-cycle theories in later chapters, most writers on the nature and origin of business cycles have assumed that the economic system was more or less unstable, that is, if any force pushed the economy off in one direction or the other (upswing or downswing), the economy would proceed in that direction in cumulative fashion. The only source of explanation of upper or lower turning points was thought to lie outside the cyclical forces themselves. Certain limiting factors or bottlenecks appear which prevent the cumulative upswing from continuing. These might be the restriction of bank credit, because the banks had reached the limit of their reserve requirements, or labor shortages, because the economy had reached a stage of full employment. On the other hand, the lowering of interest rates by the banks, who had excess reserves, the discovery of some great innovation, etc., were types of factors adduced to explain the cessation of a cumulative downward spiral. But these limiting factors were something apart from the cyclical processes, never an integral part of them.

The analysis of the interaction of the multiplier and acceleration principles shows that it is possible to explain turning points without resorting to special explanations, that the cyclical processes themselves contain the factors which may, in many cases, be adduced to explain the downturns and revivals in business activity. These factors are a marginal propensity to consume less than one plus the acceleration effect, with the former perhaps the more important. A marginal propensity to consume less than one means that the demand for consumer goods will rise less than production or na-

<sup>45</sup> Recently, strong efforts have been made to describe a business cycle under conditions in which the value of the accelerator is *variable*. See J. R. Hicks, *A Contribution to the Theory of the Trade Cycle* (London, Oxford University Press, 1950); and R. M. Goodwin, "The Nonlinear Accelerator and the Persistence of Business Cycles," *Econometrica* (January 1951), pp. 1-17.

tional income. This in itself might explain a downturn. In addition, however, the acceleration effect drives investment even farther up than it would go in its absence, making the downturn even sharper. By the same token, the fact that consumption declines *less* than income during a downswing might, in some cases, explain a revival or upturn in business activity. The acceleration effect, however, acts to push investment down even lower than it would go without it, making the revival even sharper than it would be based alone on an MPC less than one.

***Note on Induced Investment and the Equilibrium Level of National Income***

In our treatment of investment and national income during the discussion in Chapter 2 and the first part of the present chapter, investment was treated as autonomous, *i.e.*, independent of the level of consumption and national income. This treatment is evident in the assumptions that investment was the same at all levels of income, so that consumption schedules in the 45° line diagrams were raised evenly throughout to indicate the level of investment, and, in the savings-investment diagrams, the investment schedules were drawn as horizontal lines throughout all levels of income. We have indicated earlier that investment activity is considered autonomous which is based on the expectations of businessmen concerning the future movements of the factors of growth of a progressive economy, such as population growth, progress in the techniques of production, etc. Since these growth activities are autonomous in the sense of being independent of current economic activity, we consider investment demand which is based on them as being autonomous also, in the same sense.

We have pointed out, however, that there is another portion of total investment demand which is directly linked to the current state of economic activity. This category of investment has been called *induced* investment. Induced investment itself may now be divided into two categories. One category is that discussed in connection with the Principle of Acceleration. Investment of this variety, as we now know, is based on the *rate of change* of national income or consumption. Thus for induced investment associated

with the Acceleration Principle at least to be *maintained*, national income must increase at a *constant* rate; for this type of induced investment to *increase*, national income or consumption must in-

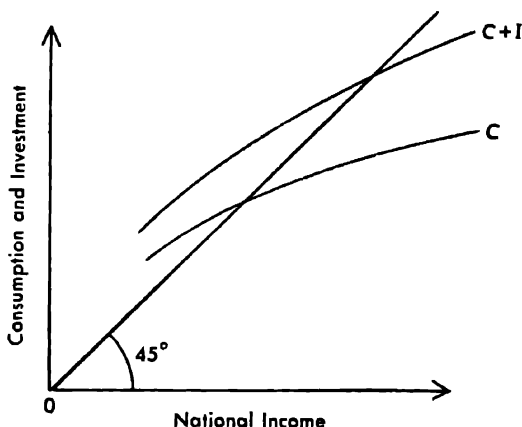


**Figure 24.** *National Income and Induced Investment*

crease at an *increasing* rate. The reasons for the acceleration effect, we have seen, are primarily if not exclusively technological in character. They are based on efforts to maintain a constant ratio between sales and capital stock plus the *durable nature* of most capital goods.

However, a certain amount of investment may properly be related merely to changes in the *level* of income (as opposed to changes in the *rate of change* of the level of income). That is to say, it is reasonable to expect investment to be greater at *higher* levels of national income than at *lower* levels. The reason for this relationship is rather clear. The profitability of a contemplated investment is obviously in large part a function of expected future sales, but because of uncertainty inherent in the future, businessmen are very likely to use current sales as the basis for estimating future sales. Movements along any given propensity to consume indicate that consumer sales do increase as national income rises. These additional consumer purchases should, more or less, induce more investment and cause national income to rise still more. Con-

versely, when national income falls, a glance at the propensity to consume tells us that consumption will fall off. But a decline in consumer purchases should damp the prospects of the profitability

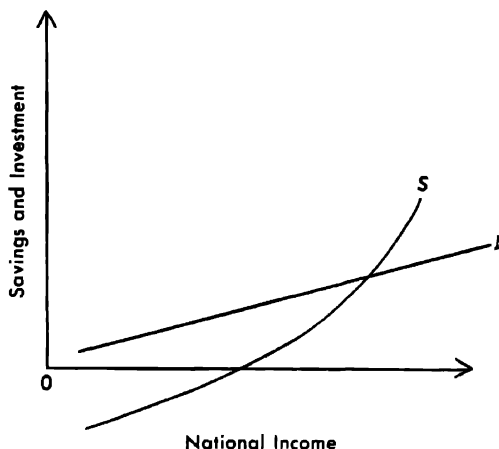


*Figure 25. National Income and Induced Investment*

of contemplated investments and thus induce a decline in investment activity, causing national income to fall still further.

It is now time for us to take cognizance of induced investment of the latter variety.<sup>40</sup> To do this requires only a slight modification of the propensity to consume—investment and savings—investment diagrams, which we have used to illustrate the determination of the equilibrium levels of national income. This is done in Figures 24 and 25.

In Figure 24 the propensity to spend ( $C + I$ ) curve is seen to diverge from the propensity to consume more and more as the national income rises. The distance between the  $C$  and  $C + I$  curves, it will be recalled, measures the amount of investment at each level of income. Where the two curves heretofore have been drawn equidistant at all points to indicate the same level of investment regardless of the income level, now the two curves diverge

<sup>40</sup> It is impossible to illustrate diagrammatically the behavior of investment associated with the Acceleration Principle, because it would be necessary to relate changes in investment to changes in the rate of change of income.



increasingly as the national income rises to indicate that the higher rates of national income (both consumption and investment) induce additional amounts of investment. Comparison of Figure 24 with Figure 19 in Chapter 2 reveals that the equilibrium level of income

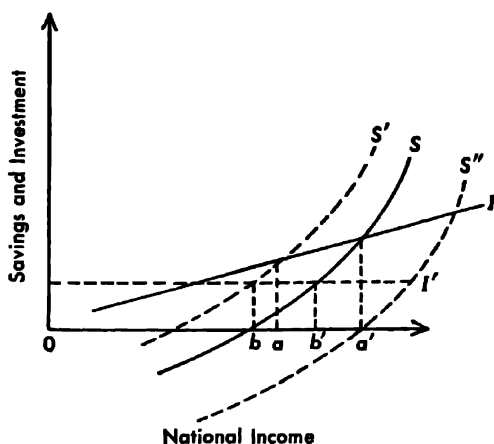


**Figure 26. The Effects of Induced Investment on Income Determination**

is higher when cognizance is taken of induced investment as well as autonomous investment.

The same thing is illustrated in Figure 25, perhaps a bit more sharply. Here the investment schedule is seen to rise as the national income gets higher, indicating that the higher level of income serves as a spur to further investment over and above the amount of investment that may be considered autonomous, or independent, of current economic activity. If we also compare Figure 25 with Figure 20 in Chapter 2, it is evident that the equilibrium level of income is higher when induced investment is included in our analysis."

With the aid of Figure 26 it is possible to indicate a bit more

<sup>37</sup> Changes in autonomous investment are still indicated by shifts in the position of the curve itself. If we wish to calculate the value of the multiplier, taking cognizance of induced investment, the formula for the multiplier becomes:  $k = 1/(1 - MPC) - MPI$ .  $MPI (\Delta I/\Delta Y)$  stands for the "marginal propensity to invest," the slope or rate of change of the investment function or schedule.  $k$ , the multiplier, is now seen to be larger than it was when based on the marginal propensity to consume alone.

pointedly the significance of recognizing the role of induced investment. In Figure 26 we have superimposed the horizontal investment schedule used in Figure 20 in Chapter 2. Now let us suppose that there were an increase in the propensity to save (or, what is the same thing, a fall in the propensity to consume), to  $S'$ . It is evident that the national income declines much further when the effects on induced investment are recognized (*i.e.*, we refer to  $I, a'$  to  $a$ ) than is the case when we include only autonomous investment (*i.e.*, we refer only to  $I', b'$  to  $b$ ). This, of course, is as it should be. A rise in the propensity to save, or a decline in the propensity to consume, means that the community will now spend less on consumption at each level of income than was the case heretofore. *Ceteris paribus*, such a decline in consumer purchases should not leave the rate of investment unaffected. Rather it is likely to damp the prospects of contemplated investment projects, and hence induce a decline in the rate of investment, too. But this decline in investment demand will itself cause the national income to fall more than it would have had investment demand remained undisturbed. By shifting the savings schedule in the opposite direction to indicate a fall in the propensity to save (or a rise in the propensity to consume) to  $S''$ , we see that induced investment causes the national income to rise more than it would have in the absence of induced investment. The reader should now be able to interpolate his own analysis of this sequence of events.

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## **PART II**

### ***THEORIES OF THE BUSINESS CYCLE***



## CHAPTER 4

### **THE THEORIES OF J. M. KEYNES AND THE STAGNATION THESIS**

#### INTRODUCTION

Few men in the history of economic thought have influenced the thinking of their fellow economists more than did J. M. Keynes when he published his historic work, *The General Theory of Employment, Interest and Money*.<sup>1</sup> This was true both of those economists who *denied* his allegations about the weaknesses of classical economics and those economists who *supported* his basic position. The former he forced to clarify a good deal of the ambiguous tenets of the classical systems of thought, and to make explicit many of the assumptions that were implicit in their analyses. The latter he gave the basic tools which they have used to build up a system of techniques of economic analysis which have greatly enriched our understanding of the functioning of our economic system, particularly those aspects dealing with the determination of the national income.

Even fewer men have influenced the economic policy of governments as did Keynes. At twenty-two he was financial adviser to the Indian Government; by the time he was fifty-three (in 1936, when his *General Theory* was published), governments all over the world, including that of the United States, were either consulting with

<sup>1</sup> (London, Harcourt, Brace and Company, Inc., 1936.) Although this work was the basis for what has been called the "Keynesian Revolution," the ensuing discussion is based not only on the *General Theory*, but on innumerable articles, written by Keynes himself as well as numerous of his disciples, which both elaborated on and qualified much of the basic groundwork that was laid in the *General Theory* itself.

him directly on matters of economic policy or else paying heed to his economic dicta as they were made known in economic and lay periodicals and, even, newspapers. This situation lasted right up to the time of his death, when he was one of the foremost advisers in the drawing up of the world-wide agreement which led to the establishment of the International Monetary Fund.

Keynes' theory of economic fluctuations might best be described as an oversaving-underinvestment theory. He stressed *both* the excessively high position of the propensity to save (or low position of the propensity to consume) and the dearths of investment opportunities, as factors inducing serious slumps in business and general economic activity. As a matter of fact, his theory is probably more aptly described as a theory of prolonged (chronic) depression—of "secular stagnation," rather than one of business *cycles*.

Secular stagnation is the name given to that school of thought which asserts that in the "mature" (highly industrialized) economies of the Western world, depressions are likely to become increasingly prolonged. In fact, it envisages a time when these economies will enter into a state of *permanent* underemployment of their resources. This situation stems from an annual rate of investment far below that required for the level of national income necessary to ensure full employment. At the same time it denies the possibility of the propensity to consume's rising of its own accord to ensure a level of consumption sufficient to fill the gap created by the decline in the rate of investment. This thesis will be developed much more fully at a later point in this chapter.

It is quite true that Keynes did not come out in the *General Theory* and clearly enunciate a thesis of secular stagnation. This was done by his American "Mohammed," Professor Hansen, and others. Nevertheless, there are many suggestions throughout the book which indicate that such a thesis was playing a large role in his thinking.<sup>2</sup> Furthermore, a couple of articles of his appeared

<sup>2</sup> "Although not elaborated at any length, Keynes' ideas about the long-run factors influencing investment demand, nonetheless, play an important part in shaping his treatment of the problem of income and employment. They determine to a considerable extent what is important and what is not; what is discussed and what is left out. To take one example: It is largely because he has become skeptical of the long-run adequacy of investment demand that Keynes

prior to the one by Hansen which, for the first time, clearly set forth the stagnation.<sup>3</sup> In these articles Keynes certainly laid the groundwork for the stagnation thesis.<sup>4</sup> Moreover, his name was variously associated with this school of thought, and he never denied the propriety of linking the idea with his name.

Whether Keynes wholeheartedly supported the stagnation thesis is perhaps not too important. Of much greater significance, undeniably, is the fact that he clearly and forthrightly posited the possibility that the economic system might attain an equilibrium position with large-scale unemployment. As Professor Sweezy has noted in the reference given above, classical economic analysis always assumed full employment to be the norm. Any deviations from this norm, in the form of an economic depression, were considered merely temporary aberrations from the norm, to which the economy would soon return, if let alone and given enough time. Keynes, however, demonstrated, with keen analytical rigor, that there is nothing "normal" about economic equilibrium at full employment. There is nothing inherent in the economy which will cause it *inevitably* to move from a state of economic depression to a state of economic prosperity, characterized by full employment.

shifts the focus of attention in the *General Theory* from the cyclical variation of the level of employment and income to the level itself. The traditional business cycle approach assumes that full employment is the norm about which activity fluctuates and to which it tends always to return. In the *General Theory*, Keynes abandons the assumption that there is any norm; the system can be in equilibrium at widely different levels of employment." Cf. Alan Sweezy, "Declining Investment Opportunity," in *The New Economics*, S. E. Harris, ed. (New York, Alfred A. Knopf, 1948), pp. 425-426.

<sup>3</sup> See A. H. Hansen, "Economic Progress and Declining Population Growth," *American Economic Review*, XXIX (March, 1939), pp. 1-15.

<sup>4</sup> See, particularly, J. M. Keynes, "Some Economic Consequences of a Declining Population," *Eugenics Review* (April, 1937). Also, "Population and Prosperity," *Spectator* (Feb. 19, 1937).

<sup>5</sup> The term "full employment" should not be interpreted literally. When used, the term usually implies allowance for what is usually referred to as *frictional* unemployment. Frictional unemployment arises from the fact that workers are not "completely changeable and mobile" in their ability to move from one job and/or occupation to another, "so that, though there is an unsatisfied demand for labor, the unemployed workers are not of the right sort or in the right place to meet that demand." This type of unemployment arises from technological change, local variation in demand, seasonal variations in demand, or wholesale changes in the structure and composition of the industry of a given region or nation. But unemployment is not considered fric-



of *all* resources ready and willing to be employed. Thus it is perfectly possible for the economy to settle down in a state of relative quiescence, neither moving upward nor downward, but maintaining a permanent "hard" core of unemployment.<sup>6</sup>

The Keynesian system of analysis neatly fits into the set of tools developed in Chapter 2. His analytical tools consist of the propensity to consume (or, its complement, the propensity to save), the marginal efficiency of capital, and the rate of interest, the latter two determining the level of investment.<sup>7</sup> Everything that was said about the general characteristics and meaning of the terms propensity to save (or consume) and the marginal efficiency of capital in Chapter 2 holds true in the present chapter. The reader should refresh himself on these points if necessary. However, because the rate of interest plays such an important part in the Keynesian system, it will be necessary to go into a rather lengthy discussion of Keynes' ideas on the rate of interest.

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tional unless there is at least some unsatisfied demand for labor somewhere in the economy, that is, the unemployment must not arise from a deficiency of *total* monetary demand. Thus full employment has been defined as a situation in which there are always more vacant jobs than unemployed men, "so that unemployment at any time is due to the normal lag between a person losing one job and finding another." For an excellent discussion of the term full employment, see W. H. Beveridge, *Full Employment in a Free Society* (New York, W. W. Norton & Company, 1945), pp. 18-20 and 408-410. The foregoing quotations are from these pages.

<sup>6</sup> How long the "state of relative quiescence" would last, of course, would depend in part on how long the unemployed would be content with that status before resorting to some form of political or economic upheaval.

<sup>7</sup> It is no accident that Keynes' set of analytical tools turns out to be exactly the same as those developed in Chapter 2, for he was the first to develop and use them. However, it is necessary to point out that these tools of analysis are, in and of themselves, completely *neutral* with respect to any theory of the business cycle. That this is so will be abundantly evident from the use which will be made of them to describe the theories of economists who wrote long before the *General Theory* appeared. That they are neutral is also evident from the widespread adoption of these concepts by economists who are in violent disagreement with the ideas of Keynes. These tools of analysis become an economic theory *only when certain values are imputed to them*. And what values are imputed to them will depend on the individual's conception of the nature and origin(s) of business cycles. The important thing is that *any* value may be so imputed; the result is a theory of the business cycle, whether it be Keynes', Hobson's, the Austrians', or anyone else's.

**THE LIQUIDITY PREFERENCE THEORY OF INTEREST**

According to Keynes, the rate of interest is determined by the supply of money and the demand for money to hold in the form of cash balances. In fact, interest is the price paid to overcome the desire to be liquid, that is, to hold cash balances. Keynes defines three motives for the holding of cash balances for liquidity preference: the transactions motive, the precautionary motive, and the speculative motive.

*The Transactions Motive.* People desire to hold cash in order to cover the interval between the time when cash outlays are made and the time when more cash will be received. This reason for holding cash balances applies to private individuals as well as business firms. Most people maintain a certain portion of their incomes in the form of cash balances so that they may apportion their disbursements more or less evenly during the period between the time they receive a particular income payment and the time the next one comes due. Similarly, business firms are very careful to maintain a certain amount of cash balances to cover the period between the incurrence of business costs and the receipt of new cash from sales. The fear of being financially embarrassed because of temporary illiquidity is of especial concern to businessmen.

The demand for cash balances for transactions purposes will vary with such things as the level of national income (*i.e.*, the level of transactions), the price level, expectations about these, the frequency and regularity of receipts and payments in the community, and the ease of borrowing short term, etc.<sup>8</sup>

*The Precautionary Motive.* Emergencies are always arising in the lives of most people, and many of them usually entail the use of cash. Perhaps the emergency may take the form of illness or an accident; maybe a good investment is in the offing or the possibility of a business "killing" exists if certain goods can be acquired. The failure to maintain some amount of cash balances for such eventu-

<sup>8</sup> The determinants of the "transactions" demand for cash balances are the same as those usually discussed in connection with the transaction velocity of money. A more detailed discussion of these factors may be found in almost any money and banking text. See, for example, L. V. Chandler, *The Economics of Money and Banking* (New York, Harper & Brothers, 1948), pp. 543-549.

alities may result in the necessity of liquidating some capital asset at a big loss to acquire cash, or, failing this, possibly foregoing the profitable business venture, etc. There is little way of predicting how much in the way of cash balances people will hold for "precautionary" purposes. To a large extent the amounts held will vary with the subjective estimates of individuals concerning the probability of such emergencies, together with their (varying) abilities to maintain liquid cash for these purposes, and their estimates of the worthiness of foregoing other uses of the cash money." The availability of short-term credit also plays an exceptionally strong role in the demand for precautionary balances by business firms. This factor becomes critically important in times of severe slump, when the credit standing of many firms goes plummeting, causing an inordinate amount of precautionary hoarding.

Keynes grouped the cash balances held for transactions and precautionary purposes under the single heading  $M_1$ . While we shall go along with this grouping for the present, there are strong reasons for treating precautionary hoarding as much more closely aligned with speculative hoarding. Transactions cash balances may be aptly described as "active" balances, in contrast with balances held for precautionary and speculative reasons. These last two appear to fit better the description "idle" or hoarded cash.

*The Speculative Motive.* This motive plays a fundamental role in the Keynesian theory of unemployment. It is basic to Keynes' theory of interest. According to Keynes, people will increase their holdings of *idle* cash balances, will hoard more money, the lower the rate of interest. The demand for cash balances for speculative purposes may be described as a demand schedule, or curve, which is negatively inclined (*i.e.*, it is a decreasing function of the rate of interest). This demand curve may be labeled the schedule of liquidity preference proper. An illustration of schedules of liquidity preference proper is shown below in Figure 27.

<sup>9</sup> A. G. Hart has developed a very interesting discussion of the precautionary motive involving a concept he calls the "Principle of Linkage of Risks." Briefly, the principle is an expression of the fact that the failure to maintain a margin of cash for emergencies may cause a chain reaction in the dire results that follow being "caught short of cash." See Hart, *Money, Debt, and Economic Activity* (New York, Prentice-Hall, Inc., 1948), pp. 198-203.

It is to be seen that the liquidity preference curves indicate that the demand for cash to hoard increases as the interest rate falls. In the Keynesian system, *hoarded* cash balances (that is, cash held for other than transactions or precautionary purposes) represent the

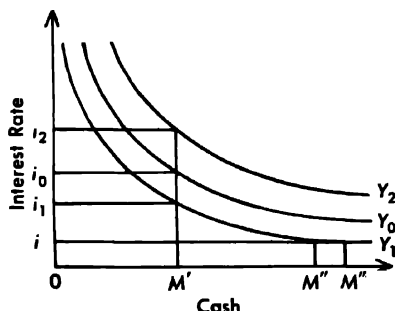


Figure 27. Liquidity Preference and the Rate of Interest

alternative to the use of this cash to purchase securities. At low interest rates people prefer to hoard their money rather than use it to buy securities. The reason for this stems from the relationship between interest rates and capital asset values—bond prices, for example.

### **Bond Prices and Interest Rates**

Bond prices and interest rates always move in opposite directions; when interest rates rise, bond prices fall; when interest rates fall, bond prices rise. The reason for this inverse relationship lies in the fact that bond prices (as well as all capital values) actually are the present (capitalized) value of the future stream of incomes discounted at the market rate of interest for the type of investment involved. This process may be illustrated with the aid of a simplified version of the capitalization formula:  $V = Y/i$ , where  $V$  stands for the present value of the future income stream of the bond (or other capital asset),  $Y$  represents the future income *per annum*, and  $i$  is the market rate of interest. Now let us substitute numbers in the formula. Thus  $\$50/.05 = \$1,000$ ; that is to say a \$50 income that will be yielded in perpetuity is worth in the present \$1,000 when the current rate of interest is 5 per cent. Suppose the interest rate

were to fall to 4 per cent:  $\$50/.04 = \$1,250$ ; the *decline* in the rate of interest from 5 per cent to 4 per cent has resulted in a *rise* in the present value of the bond's future revenue stream of \$50 (*i.e.*, the bond price) annually from \$1,000 to \$1,250. If the interest rate were to *rise* from 4 per cent to 6 per cent, the bond price would *fall* from \$1,250 to \$875.

***The Inverse Relation of Interest Rates to Security Prices Induces Increased Hoarding as the Interest Rate Falls***

To return to the central theme of our analysis, Keynes pointed out that people are in the habit of getting accustomed to a particular level of interest rates that happens to establish itself for any extended period of time. The more the actual market rate of interest falls below the accustomed rate(s), the stronger the expectations of potential lenders (purchasers of securities) that the interest rate will soon rise again to its "normal" level. Anyone who expects the rate of interest to rise in the near future will refrain from tying up his money in securities, but rather will hoard his money pending the rise in interest rates. For the rise in interest rates implies a decline in security prices, and the purchaser runs the risk of having to sell his security sometime in the future at a price far below that at which he purchased. The resulting capital loss may wipe out, and more, whatever interest income accrued during the time the security was held. Thus the demand for cash to hold in the form of idle balances increases as the rate of interest falls, and, moreover, will probably take place at an increasing rate the farther the interest rate falls below the "normal" rate, that is, the rate to which the community has grown accustomed in the preceding time period.<sup>10</sup>

<sup>10</sup> Two problems suggest themselves at this point: what is the "normal" rate of interest referred to in the text, and how is an increase in hoarding observed? In answer to the first question, we may say that it is totally unnecessary to state a precise figure. All that is necessary is that the community grow accustomed to a particular level of interest rate(s), whether this level be relatively high or low, 6 per cent or 3 per cent, and that the actual market level of interest rate(s) proceed to fall below this level. The historical data on the movements of interest show that there is nothing absolute or "normal" about *any* particular level of interest rates. Judged on the basis of the level of interest rates during the 1920's, those of the '30's appeared very low. However, there have been periods in our history when the structure of interest rates

*At Certain Low Rates of Interest the Demand for Cash Balances Becomes Perfectly Elastic*

Close scrutiny of the liquidity preference schedules in Figure 27 reveals another, especially significant, characteristic about the behavior of the demand for idle cash balances in response to declines in the interest rate. As the interest rate falls lower and lower, the curves become increasingly elastic, until finally, they become perfectly elastic. If the liquidity preference schedule were  $Y_1$ , for example, then if the interest rate fell to  $i$ , the demand for cash to hoard would become infinitely elastic at that level. The reason for this phenomenon involves a continuation of the reasoning process developed above to explain the negative slope of the curves. We observed that the farther the interest fell below the accepted normal rate, the more cash is the community likely to hoard. This is a natural consequence of an increasingly strong expectation that the interest will soon begin to rise again back to its normal level. At some interest rate below the norm, Keynes argued, the community becomes convinced that it will not fall any further, but instead will start to rise. At this rate ( $i$  on the curve  $Y_1$ ) people will hoard *all* new cash that comes into their hands. This means, in effect, that nothing can be done to lower the interest rate beyond this level.

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was just as low. The only significant relationships are the relative levels of the interest rate structure in successive time periods, or phases of the business cycle.

The problem of measuring changes in the rate of hoarding for society as a whole is a bit more troublesome. Most people are not in the habit of separating their "active" cash balances from their "idle" ones. It is probably a question of maintaining a minimum balance below which they will not go, with the minimum varying upward or downward as they decide to "hoard" more or less. The question then becomes one of determining the length of time necessary for a balance to be held idle before it is classified as a hoarded balance. But "overnight, all balances are idle, and over a sufficiently long period, all may have been active, in the sense of having been turned over." (Haberler, *Prosperity and Depression*, Lake Success and New York, United Nations, 1946, p. 202.) To measure the change in the rate of hoarding statistically, therefore, it is necessary to resort to the statistics on the transactions velocity of money. An increase in the velocity of money signifies a decrease in the demand for cash balances for speculative purposes (decrease in hoarding), while a decrease in the velocity of money indicates an increase in hoarding. For a good discussion of the problem of measuring changes in hoarding, see Haberler, *op. cit.*, pp. 202-205.

Whether the monetary authorities increase the quantity of money, or whether cash is released from the active balances held for transactions or precautionary purposes, all the increments in cash will be hoarded in anticipation of the rise in interest rates (collapse in bond prices).<sup>11</sup> This possibility is illustrated in Figure 27 also. Note that on the curve  $Y_1$  as the quantity of money is increased to  $M'''$  and beyond, the interest rate is unchanged, for all increments in the money supply over and above  $M''$  will be hoarded in anticipation of the rise in the rate of interest.

Keynes labeled that portion of the total of cash balances held for speculative purposes,  $M_2$ . Since all the cash in circulation must be in somebody's balance, idle ( $M_2$ ) or active ( $M_1$ ), it follows that  $M_1 + M_2 = M$ , the total amount of money in circulation.

We have observed that according to the liquidity preference theory of interest, the rate of interest is determined by the demand for and the supply of money.  $M_1$  and  $M_2$ , we have seen, constitute the demand for money, for transactions and for precautionary purposes and speculative reasons, respectively.  $M$ , it has just been noted, is the total supply of money. Who determines the supply of money,  $M$ ? The central monetary authorities, who fix the money supply in accordance with the particular monetary policy being followed. Because the supply cannot be rigorously related to any particular variable in the economic system, Keynes is in the habit of treating it as a constant. However, this treatment is only a matter of convenience, of simplification; it is not an integral part of Keynes' structure of analysis.

### *The Determination of the Interest Rate*

We are now in a position to show the determination of the rate of interest in accordance with the liquidity preference theory of

<sup>11</sup> The hoarding may be done by individual savers and by institutional savers such as insurance companies, savings banks, trust funds, and, also, commercial banks. In the latter case, attempts on the part of the monetary authorities to expand the money supply through open market purchases or lowering of reserve requirements may be completely throttled by the commercial banks, who simply use their increased reserves to build up their excess reserves. This factor provides a partial explanation of the development of huge excess reserves in the commercial banks in the United States during the thirties. Banks, like any other lender, may refuse to make loans or investments if they anticipate a rise in interest rates.

Keynes. In Figure 27,  $M'$  is taken to be the total supply of money, as determined by the monetary authorities. Three different liquidity preference schedules are presented. These schedules show the demand for cash for *speculative* purposes  $M_2$ . Given any particular schedule of liquidity preference and the supply of money, the interest rate is automatically determined. Thus if the liquidity preference schedule happens to be  $Y_0$ , with the supply of money equal to  $M'$ , the interest rate is given at  $i_0$ . A higher demand schedule for cash to hoard of  $Y_2$  would result in the higher interest rate of  $i_2$  (with the money supply of  $M'$ ). A hoarding schedule at the level of  $Y_1$  produces an interest rate of  $i_1$ . It is evident that, with a fixed supply of money, the interest rate varies directly with the height of the liquidity preference schedule, rising as this rises and falling as this falls. It should also be evident that given any *particular* schedule of liquidity preference, the rate of interest varies *inversely* with the money supply, rising as the money supply shrinks, and falling as the supply of money expands. In the latter case, however, we have noted the possibility of a "floor" beneath which the interest rate may not fall; this takes place when the very (or completely) elastic portions of any particular liquidity preference schedule are reached.

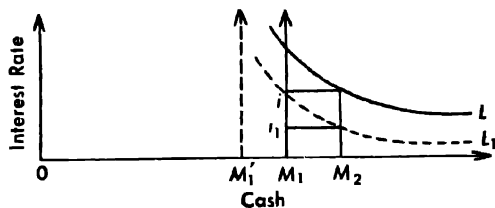
Thus far we seem to have confined the discussion of the interest rate determination, on the demand side, to the use of cash balances for speculative or hoarding purposes. The reader may, correctly, be wondering about the role of the demand for cash balances for transactions and precautionary purposes. The demand for cash balances for these two purposes will undoubtedly vary mostly with the level of transactions and the price level at which they are proceeding; in other words, the demand for cash for  $M_1$  will vary primarily with the national income. Given any particular schedule relationship between the interest rate and the demand for cash for hoarding purposes, and given the demand for precautionary balances, the *position* of the schedule will vary directly with the national income. The higher the national income, the higher the position of the schedule of liquidity preference, and vice versa. Given the speculative and transactions demands for cash balances, the position of the schedule will also vary directly with the demand



for precautionary balances. As a matter of fact, the transactions and precautionary demands tend to offset one another to a great extent, and hence, limit the movements of the schedule. The reason is that the precautionary demand for cash balances tends to rise sharply during periods of deflation and depression, at the very time the national income and prices, and therefore, the transactions demand for cash balances, are falling. The opposite tends to be true in periods of recovery and prosperity.

This relationship between the *height* of the liquidity preference schedules as determined by the national income and its effects on  $M_1$  should now answer the question in the reader's mind regarding the role of  $M_1$  in determining the interest rate. For the significance of the direct relationship between the height of the schedules and the rate of interest is that the more cash needed for, say, transactions purposes, the less is available for hoarding purposes, and, therefore, the higher is the rate of interest. The less cash needed for transactions purposes, the more there is to satisfy the propensity to hoard, and so the lower is the interest rate.<sup>12</sup>

<sup>12</sup> We may emphasize the relationship between  $M_1$ ,  $M_2$ , and the rate of interest with the aid of the following diagram:



$OM_2$  measures the total amount of money in existence;  $OM_1$  measures that portion of the total used for transactions and precautionary purposes, and  $M_1M_2$  indicates that portion used for hoarding. Given the liquidity preference schedule and  $M_1M_2$  as the quantity of money available for hoarding, the interest rate is established at  $i$ . A decrease in the amount of money for transactions purposes, which is released for hoarding purposes, may be indicated by a shift to the left of the quadrant containing the liquidity preference schedule, with the latter maintaining the same position within the quadrant. Thus the only things which have changed are the relative amounts of money available for transactions and speculative purposes. More money is available for the latter and less for the former,  $M'_1M_1$  measuring the increase in the amount available for hoarding. It is to be seen that the release of cash from active to idle cash balances has reduced the interest rate from  $i$  to  $i_1$ . By shifting the liquidity preference quadrant to the right to indicate an increase in the size

## THE KEYNESIAN THEORY OF UNEMPLOYMENT

*Permanent Underemployment Equilibrium in Mature Economies*

Now that we have the Keynesian Liquidity Preference Theory of Interest before us, we may proceed to analyze his theory of unemployment. Keynes argued that in the mature (highly industrialized) economies of the Western world, the equilibrium levels of national income, as determined by the propensity to consume (or save) and the rate of investment, were displaying an increasing tendency to remain permanently below the levels of national income necessary to provide full employment of the available resources. This thesis, that the mature economies of the Western world are entering upon an era of *chronic* depression and unemployment, may be illustrated by referring to Figure 28 on page 148.

Assume  $OF$  to be the national income needed to provide full employment of the nation's resources. It is evident that this level cannot be maintained, given the consumption and investment schedules of Figure 28. At the national income  $OF$ , the rate of savings generated by this level of income (measured by the distance  $ab$  between the 100 per cent line and the propensity to consume) is considerably greater than the rate of investment  $ah$  forthcoming at the same level ( $bh$  shows the excess of savings over investment at the full employment income  $OF$ ). Hence national income must fall until it reaches  $OY$ , for it is only at this level that savings and investment are the same. But  $OY$  is considerably less than the full employment income of  $OF$ . Keynes' position is that in the mature economies of the Western world the equilibrium levels of income ( $OY$  on the graph) will tend to remain permanently below the national incomes required to generate full employment ( $OF$  on the graph).

What is the origin of this more or less permanent underemployment equilibrium? Looking at Figure 28, it is evident that the excess of savings over investment at the full employment income  $OF$  might be ascribed alternatively either to too little consumption

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of active cash balances at the expense of hoarded balances, the reader can prove for himself that the interest rate will rise.

or too little investment. But, says Keynes, the origin is *both* too little consumption and too little investment. The rich, highly industrialized economies tend to have too high a rate of saving at their full employment incomes, while the (autonomous) investment

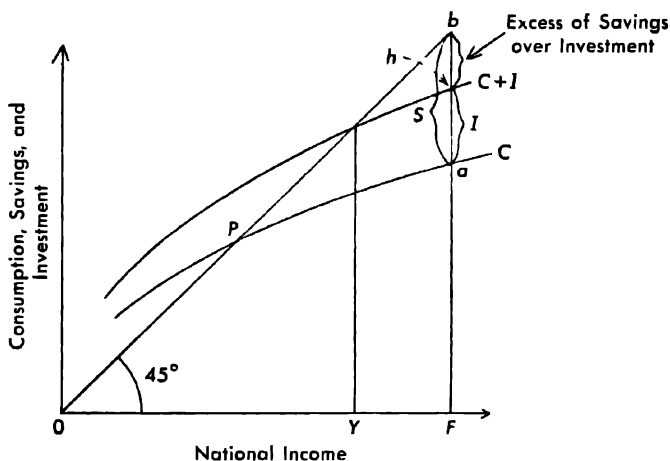


Figure 28. An Illustration of the Stagnation Thesis

outlets in these economies are not sufficient to absorb these savings, and so maintain the full employment incomes. The reasons for the insufficiency of investment and consumption embody the essence of the so-called "stagnation thesis," to which we shall now proceed. First, let us examine the reasons for the deficiency in consumption.

#### ***Too Little Consumption—A Low Marginal Propensity to Consume***

The propensities to consume as they have been drawn show that consumption increases at a decreasing rate, that is, the marginal propensity to consume gets smaller as the national income rises. As a result, the propensity to consume in Figure 28 above, for example, is seen to fall farther and farther away from the 45° or 100 per cent line as the national income rises. This means that more is saved at higher national incomes than at lower ones. As we know by now, unless these savings are absorbed into investment, the national income will fall, until the rate of savings is reduced to

the level where all the savings will be invested. However, if the propensity to consume were a *straight* line, showing that the nation spent as much out of an extra dollar of income at high national incomes as it did at low national incomes,<sup>11</sup> it is clear that the gap between the 100 per cent line and the propensity to consume (to the right of point *p*) would be considerably diminished, indicating that rate of savings at high national incomes is considerably reduced. This, in turn, would lessen the amount of investment required to absorb the savings at high (or full employment) national incomes, and thus prevent the national income from falling.

It is Keynes' position, however, that there is a "fundamental psychological law" which, *a priori*, suggests that the marginal propensity to consume is less than one and diminishes as the national income gets higher. This psychological law is something of a catch-all phrase to describe the *stability* of consumption habits in the face of short period (or cyclical) changes in the level of income. Thus people who suddenly receive increases in their incomes usually do not immediately increase their living standards proportionately, but raise their consumption expenditures slowly over time. In the meantime they save a portion of their increase, or perhaps use a part of it to repay debts. Similarly, people whose incomes suddenly fall from a long accustomed level will usually resist curtailing their living standards, and dig into savings in an effort to maintain long-accustomed standards. In addition, Keynes utilizes the "law" to describe the well-known tendency of the rich to save much more than the poor do, because their incomes carry them well past the margin of "primary needs," placing them in a position to save easily, and, in the case of the very high income brackets, to save almost in automatic fashion.

In support of this *a priori* plausibility of the "fundamental psychological law" making the marginal propensity to consume less than one, Keynes offers the testimony of experience. If the marginal propensity to consume were one or greater, the value of the investment multiplier would be infinity, and the economic sys-

<sup>11</sup> A propensity to consume drawn as a straight line would mean that its slope (MPC) would be a *constant*, whose value would be set by the slope given the curve as a whole.

tem would be violently unstable. Small changes in the rate of investment with a multiplier of infinity would cause the national income to move wildly upward or downward, depending on the direction of the change in investment. Experience demonstrates, however, that the economy is not so unstable, that runaway inflations or deflations do not represent the commonality of business-cycle occurrences. We are not precipitated into violent inflations and deflations at the slightest change in investment. In fact, the investment multiplier does not appear to be greatly in excess of unity. On these empirical grounds, therefore, Keynes argues, we can be sure that the marginal propensity to consume is less than one.

Thus on the basis of deductions from our knowledge of consumer behavior in general and of the saving propensities of the rich, together with our knowledge of the behavior of the economy with respect to the investment multiplier, Keynes holds that it is a "fundamental psychological rule of any modern community that, when its real income is increased, it will not increase its consumption by an equal *absolute* amount, so that a greater absolute amount must be saved . . . ,"<sup>14</sup> that is, that the marginal propensity to consume is less than unity. Furthermore, the marginal propensity to consume of wealthier countries is smaller than that of poorer countries. Since wealthier countries generally have higher national incomes than poorer ones, Figure 28 can be used to show this. It is evident from the curvature of propensity to consume that its slope (MPC) diminishes as the national income gets higher.

It should be noted at this point that Keynes does not appear to have been clear in his own mind whether the characteristics of the marginal propensity to consume he was describing referred to a short run consumption function or to a long run one. In some instances he is undoubtedly concerned with the former, for he explicitly refers to the *cyclical* ramifications of a curvilinear consumption function. But when he makes the oft-mentioned comparison of the marginal propensity to consume of poor and of wealthy countries, one must infer that it is long run economic growth that is in mind. Since the problem of a permanent under-employment equi-

<sup>14</sup> Keynes, *The General Theory*, p. 97. It should be remembered that the marginal propensity is less than unity both for rises and falls in income.

librium is essentially a problem of long run growth, it seems best to interpret Keynes' remarks about a low marginal propensity to consume to refer to the characteristics of the slope of the long run consumption function of wealthy (highly industrialized) nations. Thus we may construe his remarks to mean that although linear in shape, the slope of the long run consumption function of wealthy countries is too low in value (relative to the amount of investment opportunities existing in these countries, that is).

Some might object that we are inferring too much when we impute to Keynes a thesis that the shape of the long run consumption function is that of a straight line (linear). We do so on the ground that Keynes definitely distinguished short run adjustments in consumption to changes in income from such adjustments over longer periods of time, indicating that more would be spent out of increments in income, the longer the period of time that elapsed. This in effect would seem to imply an upward shift in the position of the short run consumption function along a long run consumption function, linear in shape but with a slope less than unity, and even intersecting the origin, denoting a constant *average* propensity to consume.

It should be noted however that Keynes does not appear to have been willing to commit himself unqualifiedly on the question of whether the long run *average* propensity to consume (the ratio of *total* consumption to *total* income  $[C/Y]$ ) falls or remains constant as real income rises, that is, whether the *proportion* of total income consumed declines or remains unchanged as real income grows. However, he deemed it sufficient for his case that the *slope* (MPC) of the long run consumption function be less than unity, and be considerably less than unity for very wealthy countries than for poor, backward ones.

### ***The Position of the Propensity to Consume Is Also Too Low***

Looking at Figure 28, the reader may observe that there is another possibility of raising the level of consumption besides reducing the slope (MPC), *i.e.*, straightening, the propensity to consume. Shifting the entire curve upward so that at its higher position it intersects the 100 per cent line to the right of the point *p*, would

also bring the equilibrium income closer to the full employment level. In other words, the tendency toward chronic underemployment and depression may be attributed to too low a position of the consumption schedule itself, completely aside from its slope.

About the position of the propensity to consume Keynes is much less clear. However, there are sufficient references and hints throughout his *General Theory* to indicate that this factor played some role in his thinking. Furthermore, his disciples and followers have made much of the low position of the propensity to consume. This is particularly true of the chief American exponent of his ideas, Professor Hansen. Hansen is of the opinion that not only has the tendency of the propensity to consume to be too low been carried over from the past, but that in recent years certain institutional developments have taken place which have served, relatively speaking, to lower it still more.

For years economists have been cognizant of the fact that the countries that are now highly industrialized have been featured in the past by economies with very low propensities to consume. The reason for this has also been long recognized. This reason was the extreme inequality in the distribution of the national incomes, which enabled the vast bulk of the incomes to fall into the hands of a comparatively small portion of the population, who saved the bulk of it, almost automatically. The statistics on the distribution of the national income through the many years show that the basic distribution pattern has not altered very significantly, despite the numerous institutional changes that have since occurred seemingly to alter the situation. Where one could justify to some extent the extreme inequality of the past on the grounds that it made possible the indispensable savings required for the process of industrialization, today, Keynes and his followers assert, the dwindling of investment outlets makes this high propensity to save an unjustifiable source of chronic depression.

In addition to the inequality in the distribution of the national income, Professor Hansen has pointed to other, more recent, institutional developments which have served to depress further the propensity to consume, particularly in the United States. Among these developments is the rapid growth of life insurance companies, whose assets jumped from 3.9 billion dollars to 30 billion dollars

plus between 1910 and 1940. At present, the incomes of insurance companies exceed their outlays by well over 2 billion dollars, which sum in effect comprises savings for net investment. On top of the rapid development of insurance companies has come the large growth of social insurance programs, which have added substantially (about 1 billion dollars) to the current rates of saving. Another development which has served as a depressant on the propensity to consume is the recent stress on the amortization of mortgages. Although from certain points of view this development was desirable, it nevertheless remains true that it has added something like 1.5 billion dollars to the current rate of annual savings. Finally, but certainly not least important, the increasing tendency of corporations to plow back profits into the business, plus the emphasis on the building of depreciation *reserves*, have both served to add considerably to the gross volume of annual savings. Together these two sources accounted for 5.7 billion dollars in 1936-1937. The importance of this source is seen in the fact that total expenditures on plant and equipment averaged 6.7 billion dollars in 1936-1937.<sup>1</sup> Other sources are cited by Hansen, which, together with those mentioned above, have served to lower the propensity to consume, and thus have lowered the equilibrium level of income. Put somewhat differently, the low propensity to consume, or high propensity to save, has placed a greater burden on the rate of investment, as the second of the determinants of national income. The rate of investment has to fill a much wider gap in order to assure an equilibrium level of income consistent with full employment. But, say Keynes and his followers, there has been a sharp decline in the amount of investment opportunities such as characterized the nineteenth century. This statement brings us to the much-discussed Stagnation Thesis.

### *The Stagnation Thesis and Underinvestment*

In Chapter 3, we carefully differentiated the categories of investment stimuli. One of these we called the dynamic and autono-

<sup>15</sup> See A. H. Hansen, *Fiscal Policy and Business Cycles* (New York, W. W. Norton & Company, 1941), pp. 238-242. The estimates in the text on the numerical contributions of the various recent developments which have exercised a downward influence on the propensity to consume are all Hansen's.



mous factors of growth which characterize an expanding economy. The other category of investment opportunity was that of induced investment, that is, investment that was derived from current national income and sales. The stagnation thesis is concerned with the former category of investment outlets, the autonomous growth factors.

These growth factors, it will be recalled, consist of (1) population growth, (2) the opening up of new territories and or the discovery of new market areas, and (3) technological advancement in the arts of production and in the development of new products. In the nineteenth century, say the stagnationists, populations grew with tremendous force. Rapidly growing populations require goods and services which give rise to huge amounts of investment, particularly that type which is associated with construction activity. The speedy growth and expansion of new towns and cities required enormous amounts of new shelter services and the services normally included in such fields of public utilities as waterworks, sewerage disposal, gas works and, later, electric works; transportation and communication facilities were needed to connect the various communities for commercial and other reasons. The amount of investment required to satisfy the demand for housing service (shelter) is greatly in excess of that required of most other consumer goods. The same is true of the services supplied by the public utilities and transportation industries, all of which require huge initial investments before the service can begin to be rendered. But the type of consumer goods demanded by stationary or declining populations is likely to entail much less investment. Personal services are an important example of this sort. Population growth also induces net investment by providing the increase in the labor supply necessary to "man" the capital goods, and if proportional to the rate of capital accumulation, by maintaining capital's marginal productivity.

On the basis of these relationships, the stagnationists argue that population growth was undoubtedly responsible for a large part of the capital formation of the last century. It is a well-known fact, however, that the mature economies of the Western world are confronted by rapidly declining population growth; in some countries ~~the~~ the rate of growth is imminently close to zero. Countries like

England, France, and the Scandinavian countries have just about reached their population peaks. The maximum for the United States has generally been predicted for the decade of 1970 or 1980. Thus, insist the stagnationists, one of the great dynamic and autonomous inducements to invest has disappeared or is in the process of doing so with frightful rapidity.

What is true of population growth holds also for the growth and development of new territories. Territorial expansion acts on investment activity very much like population growth. In fact, it may not be too far wide of the mark to say that the two have gone hand in hand, that the availability of new territories to inhabit acted as a spur to population growth. The building up of new territories required huge investment in highways, railroads (earlier, canals), in communication facilities, etc. The communities that grew up in the new territories also required astronomical sums to be spent on the various types of construction activity associated with new communities. The building of new plants and equipment for those industries whose products, not economically transportable, were needed to supply the requirements of the new communities also gave rise to great amounts of investment.<sup>10</sup>

The era of territorial expansion, like the era of population growth, has come to an end, both for the United States and Europe. And this ending includes foreign investments as well as movements of migrating populations. The stagnationists grant that there is still considerable latitude for foreign investment in the backward areas of the world, but they doubt that these outlets can provide an era of development and growth of new territory comparable to that which characterized the nineteenth century. The second of the three great growth factors, then, has also disappeared. This leaves only the third growth factor, technological progress, to carry the burden of providing sufficient investment outlets for the large amounts of savings generated at full employment incomes in the highly industrialized economies of the world.

That technological progress will provide the required outlets for the investment of full employment savings, the stagnationists are

<sup>10</sup> Of course, to the extent that population growth took place in developing frontiers, these two inducements to invest overlap somewhat.

very pessimistic. It is their belief that the capital formation that embodied the developments of new techniques of production was to a considerable extent given impetus by the opportunities for investment created by rapidly growing populations and the opening up of vast new territories. "... population growth and the penetration into new territory ... played an important role in the widening of the market and the development of mass production techniques. Extensive expansion minimized the risks of technological innovations and encouraged bold experimentation."<sup>17</sup>

Moreover, certain institutional developments have taken place in recent years which have slowed down considerably the implementation of new inventions in actual new investment. The reasons lie in the numerous restrictive practices which abound in industry today. Trade unions, taking the short-sighted point of view, often resist the use of new technological discoveries for fear of technological unemployment. The growing concentration of production in sufficient degree as to confer an important degree of monopoly power on many firms has had similar effects. Patent shelving is a well-known and widespread phenomenon. Even when patents are not actually shelved, their incorporation into new investment is slowed down by the practice of ensuring that an old investment has been fully depreciated before scrapping, or, at least, that the loss on the undepreciated portion of the old investment is offset by the lower operating cost of the new investment.<sup>18</sup> Under conditions of "vigorous price competition" a new technique of production would find an outlet in investment as soon as average total cost of production fell below the market price of the product in-

<sup>17</sup> Hansen, *op. cit.*, p. 45.

<sup>18</sup> A producer who has his choice in the matter (say, a monopolist, who is not under competitive pressure) will not scrap an unfully depreciated piece of equipment unless, with the output as a given, the average total cost of producing with the new equipment is less than the average *variable* cost of the old equipment, whose *fixed* cost is already sunk capital. From the point of view of the problem of obtaining an optimal allocation of resources, this is a perfectly valid economic principle. So much so, in fact, that it is the widely accepted basis for a socialist economy's decisions regarding the best time for adopting new production techniques and scrapping old. But in an economy confronted with the problem of an insufficient level of investment to obtain full employment of its resources, this principle can work to the detriment of society, by slowing down the rate of investment.

volved. And the forces of competition would presumably cause other producers to follow suit rather promptly. Thus even if the rate of technological progress maintains its historical pace, the rate of capital formation, of new investment, which springs from this source may be slowed down by the restrictive practices of monopoly.

One final point is further suggested by the stagnationists. Having watched the U.S. economy develop during an era of chronic labor shortage, we have become accustomed to assuming that the vast bulk of technological progress will take the form of *labor-saving* devices. However, the era of labor shortage in this country is now history and is likely to remain so for some time to come. We may expect an increasing portion of inventions to take the form of *capital-saving* devices. In the short run, of course, even this type of invention will act as a spur to new investment. But in the long haul, inasmuch as these inventions mean less capital per unit of output, the rate of capital formation will be lowered as a result of this force.

It is worthy of note that the argument of the stagnationists is not predicated on the belief that the rate of technological progress necessarily will decline along with the disappearance of its sister growth factors. It is possible to maintain the stagnationist viewpoint with complete confidence that the historical rate of growth in new techniques will be maintained without change. But there is the rub. If all three factors of growth were individually and jointly responsible for the high rates of investment characteristic of the nineteenth century, and two of the factors are in the process of disappearing, then it is not enough for the third to maintain its historic rate of growth. The rate of technological development must *increase* sufficiently to compensate for the decline in the other two. If there may be little *a priori* reason for believing that technological progress may slow down, there are no grounds for feeling that it will increase.

The reader may perhaps get a good glimpse of the stagnationist philosophy if we quote briefly from Professor Hansen, foremost among the stagnationist school. The century preceding the first World War

. . . was a century of rapid expansion into new territory, and it was a century of prodigious growth of population. . . . This one central fact

of growth and expansion dominated the whole of economic life. It minimized the risk of new ventures. If optimism had carried railroad building too far at the moment, if a city had temporarily overbuilt, the damage was short lived. Expansion and growth soon made good the error. . . . The modern world . . . is loaded with a high risk factor. . . . The highly dynamic nineteenth-century was also a world of high risks. Nevertheless, confronted with alluring investment projects springing from rapidly expanding population, the occupation of new territory, the exploitation of new resources, and the growth of new industries, capital outlays were eagerly made, despite the high risk factors. A rapidly expanding economy can afford to undertake, and willingly does undertake, risk. . . . Our current, less rapidly expanding economy . . . does not enjoy the buoyancy and optimism under which the rapidly expanding economy of the prewar century was capable of riding roughshod over risk.<sup>19</sup>

*Secular Stagnation, the Marginal Efficiency of Capital, the Rate of Interest, and Investment*

It is time now to cast the stagnation thesis into the analytical framework which we developed in Chapter 2. The effect of the decline and virtual disappearance of two of the dynamic investment stimuli—population growth and territorial expansion—is, clearly, permanently to lower the marginal efficiency of capital. Unless the rate of interest also declines, sufficiently to offset the fall in the marginal efficiency of capital, the rate of investment must decline, and with it, the national income. Keynes, however, denied the possibility of the interest rate falling enough to offset the decline in the marginal efficiency of capital. It might well fall somewhat, but eventually it will reach a lower limit, established by infinitely elastic schedules of liquidity preference, plus the floors set by various institutional borrowing costs. All measures to lower the interest rate are futile at this point. Under the pressure of the disappearance of the two growth factors, the marginal efficiency of capital will fall much farther than the rate of interest, so that the rate of investment will decline.<sup>20</sup>

<sup>19</sup> Hansen, *op. cit.*, pp. 347–348. The most thorough exposition and defence of the stagnation thesis is undoubtedly to be found in this book. See *passim*, but especially Chaps. I, XIV, and XV, Part 4.

<sup>20</sup> Shortly, another and equally important reason for the inefficacy of movements in the interest rate will be posited. This reason, that the marginal

### Summary

We have thus arrived at the conclusion that equilibrium with large-scale unemployment is perfectly possible, and, in fact, confronts the mature economies of the Western world. Consumption is too low, first, because the marginal propensity to consume is too low at the full employment levels of national income in these countries. Consumption is too low, also, because of the too low position of the entire propensity to consume itself. Investment will not, cannot, be high enough to absorb the savings generated by the full employment incomes. The decline and virtual disappearance of population growth and territorial expansion have served to depress too much the marginal efficiency of capital. The interest rate cannot be lowered sufficiently to offset the fall in the marginal efficiency, because at certain levels below the "normal" rate of interest, the demand for cash to hoard becomes perfectly elastic; this plus various institutional borrowing costs forestall attempts to force it lower.

In effect, we have a more or less *deflationary gap* at full employment levels of national income. Savings exhibit a persistent tendency to outrun the rate of investment forthcoming at these levels. The result is that the national income must fall below the full employment levels until savings are reduced enough to be absorbed into the investment projects forthcoming at these low national incomes. The result: chronic depression, with a *permanent* hard core of unemployment. Even if the mature economies experience upswings, these will lack the buoyancy and vigor to achieve any significantly lasting period of prosperity and full employment. Not only will future upswings be anemic, however, but the depressions of the future will be deep and long lasting, leaving us with a legacy of persistent, large-scale unemployment.<sup>21</sup>

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efficiency of capital is inelastic with respect to changes in the interest rate, is widely held by Keynesians and non-Keynesians the world over. Keynes himself appears to have been unable to make up his mind on this matter. He relied solely on his ideas about the shape of the liquidity preference schedule, that is, that at certain rates below the accustomed "norm," the schedule becomes perfectly elastic and effectively prevents the (necessary) further decline in the interest rate.

<sup>21</sup> The stagnationists sharply reject any notion that points to the post-World War II experience as effectively disproving their thesis. The postwar

## CRITICAL EVALUATION

*Unemployment and Wage Rigidities*

There is probably no more repeated argument against the underemployment equilibrium of Keynes than the one that asserts that such a situation is possible only because Keynes assumes that wages are rigid in the downward direction. The classical writers maintain that if wages were permitted to be flexible in the downward direction, equilibrium of the economy with less than full employment would be out of the question. It was this view of the problem of unemployment which Keynes challenged. There has developed out of this question concerning the relative merits of wage reductions a huge quantity of literature. Economists have been forced to rally all their intellectual equipment and empirical knowledge in an effort to sustain their different positions on the problem. The importance of these discussions cannot be underestimated, for out of them has come a wealth of material dealing not only with wages, but dealing also with the influences on the propensity to consume.

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boom was something that has always transpired after every war. The advent of World War II merely interrupted the trend that sharply manifested itself during the thirties.

One other point is worthy of note at this juncture. In Chapter 8 it is shown (page 26, n. 8) that Marx's *Capital* contains a twofold theory of the business cycle, an underconsumption theory and a long run overinvestment one. His underconsumption theory is explained there briefly. It is worth while to note, also, Marx's long-run overinvestment thesis, if for no other reason than its belonging to the intellectual ancestry of Keynes. In the note just referred to, surplus value is defined as the difference between the full value of labor's product and the portion of this value product that is paid labor in the form of subsistence wages. A larger and larger portion of surplus value is invested by the capitalists in fixed capital, with proportionately less going to variable capital. The latter, for the economy as a whole, in the short run, may be taken to comprise current wages. Let  $S$  symbolize surplus value,  $F$  fixed capital, and  $V$  variable capital. Then the rate of profit is  $S/(F + V)$ . It is to be seen that this profit rate will decline, as,  $S$  per annum remaining constant or rising slowly,  $F$  grows each year, as a result of more and more of  $S$  being devoted to additions to fixed capital. In other words, as the economy accumulates more and more plant and equipment, the rate of profit from investments in new and existing capital declines. This Marxian declining profit rate is nothing but the rate of return over cost, the Keynesian "marginal efficiency of capital." For a more complete discussion of the relation of Keynes to Marx, see L. R. Klein, *The Keynesian Revolution* (New York, The Macmillan Company, 1949), pp. 130-134.

the rate of investment, and with the much debated role of the interest rate. Most important, perhaps, is the light they have helped to shed on the all-important role of wage policy during the course of the movements in the national income, especially the role of wage adjustments during depressions.

Most of the discussions of the problem of wage flexibility can be neatly brought into one of two categories: (1) Those which deal with the influence of wages on the investment schedule, or, more directly, the marginal efficiency of capital and the rate of interest; and (2) those discussions which emphasize the role of wages in the forces influencing the propensity to consume. Accordingly, we shall break down our discussion along the same lines, as we turn now to the problem of wage inflexibilities and underemployment equilibrium. We begin with the relationships between wages and investment.

### *Wages, Investment, and Foreign Trade*

Keynes was the first to agree<sup>22</sup> with the classical argument that a general fall in wages may well induce a fall in prices of exports and thus stimulate their sales abroad. At the same time the fall in domestic prices will shift domestic demand from imports to domestic goods. Such an increase in exports relative to imports is equivalent to an increase in (foreign) investment. Through multiplier effects, etc., this event should have salutary effects on the national income and employment. But this is too easy. If it is good for one country, why not for all? Obviously, however, it is impossible for *all* countries to increase their exports relative to their imports.

The catch in this argument for wage reductions is that it assumes that other countries will not also resort to general wage reductions in an effort to boost themselves out of depressions. But they may, and if they do, the effects will largely cancel out. Moreover, instead of wage reductions, foreign nations may resort to tariffs, exchange controls, etc., to offset the effects of lower wages abroad. These will all have the effect of raising the cost of imports in these countries, and, therefore, also offset the effects of money wage reduc-

<sup>22</sup> *The General Theory*, pp. 262-263.



tions in those countries trying to increase their exports, leaving foreign, and thus *total*, investment of the latter unchanged.

### *Wages, the Rate of Interest, and Investment*

Excluding the (uncertain) effects of foreign trade, a large body of economists today are agreed that if lower wages increase investment, they must bring about a fall in the rate of interest, and this, in turn, must be effective as a stimulus to investment.<sup>23</sup>

The manner in which a general reduction in the level of wages may effect a diminution in the rate of interest is fairly simple. The fall in wages, especially if accompanied by a fall in prices, means that less cash is needed to satisfy the transactions motive, for business as well as private income purposes. The portion of cash which is rendered superfluous for transactions purposes is then available to hold for speculative, or hoarding, purposes. Our analysis of liquidity preference earlier in this chapter has shown that an increase in the supply of cash for hoarding purposes will reduce the interest rate provided this sequence of events does not take place when the interest rate is at the level where the liquidity preference schedule is infinitely elastic. The fall in the rate of interest, given the schedule of the marginal efficiency of capital, will then lead to an increase in the rate of investment, income, and employment.<sup>24</sup>

One reply to this argument, due to Keynes, has already been suggested. If the rate of interest has already begun to approximate the

<sup>23</sup> The group of economists referred to includes Keynes, who originated this approach in the *General Theory* (pp. 263-264), as well as Professor A. C. Pigou, classical theory's staunchest and probably most able defender. See his articles: "Real and Money Wages in Relation to Unemployment," *Economic Journal*, XLVII (1937), p. 405, and "Money Wages in Relation to Unemployment," *idem*, XLVIII (1938), p. 135, and *Employment and Equilibrium*, 2d ed. (London, Macmillan & Co., Ltd., 1949), *passim*.

<sup>24</sup> Many economists have insisted that a general fall in wages will stimulate an increase in output and employment directly by bringing about a reduction in marginal costs. Keynes has countered that prices will fall proportionately, so that *real* wages will remain unchanged; therefore, output and employment will not be stimulated. He has been criticized on many fronts for this position, on the grounds that marginal costs consist of more than wage costs, so that prices will fall by less than wages, and output *will* be increased.

Since Keynes was arguing primarily from the short-run point of view in this connection (*General Theory*, p. 12), his position seems to be sound. In the short run, the stock of capital is fixed. For industry as a *whole*, in the short run, all variable costs will consequently resolve themselves into labor costs.

levels at which schedule of liquidity preference becomes perfectly elastic, the fall in wages will have little or no effect on the interest rate. That is, the cash released from transactions use, instead of being put into securities and thus lowering the interest rate, is simply hoarded. The wage reductions may, on this account, be futile as a stimulus to investment.

There are other factors besides liquidity preference which may keep the interest rate from being reduced to the desired levels along a given marginal efficiency schedule. One of these is the factor of administrative costs of borrowing and lending. In addition to overhead and labor costs incurred by banks, investment houses, and the like, administrative costs may be taken to include the value that lenders place on the inconvenience of altering the composition of their portfolios between cash and securities and also among different types of securities. Floors will also be influenced by the premia placed upon the factor of risk by lenders. Risk to lenders arises from the possibility of default on loans by borrowers and the possibility of loss suffered through the sale of securities at prices below those at which purchase was made. The interest rate is partly a recompense to lenders to induce them to bear these risks.

The full import of *floors* to the level of interest rates is further seen in the fact that the marginal efficiency schedules may also *shift* downward to such low positions that interest rates cannot be reduced *enough*, because of the floors. As a matter of fact, the marginal efficiency of capital schedules may sink so low that only *negative* rates of interest will suffice to stimulate investment in an effective manner. So long as we permit people to hoard without cost, as we now do, the various risk elements and administrative costs will keep the interest-rate structure from falling to negative levels.

A further reply to the case for reducing wages to effect a decline in the interest rate is Keynes' wise statement that, used in this way, wage rates in effect become an instrument of monetary policy. This being the case, exactly the same ends may be accomplished, or striven for, by manipulating the money supply. It is obvious that more cash for hoarding may be obtained by increasing the total volume of money as well as by releasing it from "active" cash

balances. And the former method has the advantage of avoiding any economic and political uncertainties that might develop in connection with wage reductions.

***The Inelasticity of the Marginal Efficiency of Capital with Respect to the Rate of Interest***

Let us grant, for the moment, that the interest rate could be lowered by one means or another. A considerable body of opinion

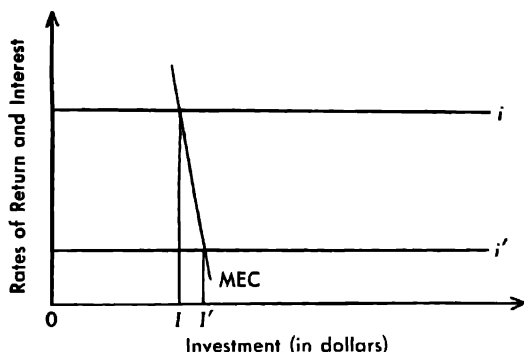


**Figure 29.** *The Effect on Investment of Changes in the Rate of Interest with an Inelastic Schedule of the Marginal Efficiency of Capital*

has developed in recent years, which denies that even then would investment be very much stimulated. For a variety of reasons, it is asserted, the marginal efficiency of capital (which is equivalent to the demand schedule for funds for investment) is *inelastic* with respect to changes in the rate of interest. Thus instead of drawing the schedule of the marginal efficiency of capital as was done in Figures 16, 17, and 18 in Chapter 2, the schedule is more accurately depicted by the inelastic MEC curve shown above in Figure 29. It is clear that with such a schedule of the marginal efficiency of capital, changes in the rate of interest,  $i$ , have little effect on the rate of investment.

In order to point up most clearly the reasons for the relative ineffectiveness of changes in the rate of interest it is necessary to turn to the discounting or *capitalization* process.

*The Marginal Efficiency of Capital and the Interest Rate as Rates of Discount*

In Chapter 2, we defined the marginal efficiency of capital as "the anticipated *rate* of return over its entire life on the original cost of a contemplated investment." Keynes, who originated the term, used it, properly, as a *rate of discount*.<sup>2</sup> As employed by Keynes, the marginal efficiency of capital is that rate (of return) which, if used to discount the future revenues from a new (durable) capital good, would just make the present (discounted) value of the future revenues equal the investment price (cost) of the capital good. Thus, given the formula  $C = Y/(1+m) + Y/(1+m)^2 + Y/(1+m)^n$ , where  $C$  is price (cost) of the capital good,  $Y$  the future revenues, and  $m$  the marginal efficiency of capital, we solve for that value of  $m$  (not  $C$ , which is known) which, if used to discount the

- Most readers are probably more or less familiar with the discounting or capitalization process. For those who are not, the following may be helpful. With the aid of the interest rate, it is possible to determine the present value of any future stream of income payments. With an interest rate of 5 per cent, we know that \$1,000 invested now will be worth \$1,050 a year from now. Reversing this process, it is evident that \$1,050 a year from now is worth \$1,000 in the present, if the interest rate is 5 per cent. Thus it becomes possible to determine the present value of any sum due one year hence by dividing that sum by 1 plus the rate of interest:  $\$1,000/1.05 = \$952.32$ ;  $\$2,000$  due one year from now would be worth  $\$1,923.08$  if the interest rate were 4 per cent, ( $\$2,000/1.04$ ) and so on. Calculating the present value of sums due more than one year hence involves a very similar process. \$1,000 invested for one year, we have found, will be worth \$1,050 at the end of the year. If we reinvest this \$1,050 for another year at the same rate of interest, it will be worth \$1,102.50. The same results may be obtained by multiplying \$1,000 by  $(1.05)^2$ . As we did before, we may obtain the present value of \$1,102.50 due two years in the future by reversing this procedure, that is by *dividing* \$1,102.50 by  $(1.05)^2$ . The answer, of course, is \$1,000. If this sum were due three years hence, its present worth would be calculated by dividing it by  $(1.05)^3$ , assuming the interest rate to be 5 per cent. Thus to find the present value of any future sum due in years in the future, we may use the formula:  $V = Y/(1+r)^n$ , where  $V$  is the symbol for present value,  $Y$  represents the future sum or income, and  $r$  stands for the interest rate and  $n$  is the number of years in the future that the sum is due.

As a matter of fact even this version of the discount formula is somewhat oversimplified. The future sums may accrue as a *series* of incomes from a durable capital asset, and there is no guarantee that the incomes accruing in each year will be the same. In addition, the interest rate may *fluctuate* over the years. In order to allow for these eventualities, an expanded version of the discount formula is necessary:  $V = Y/(1+r) + Y/(1+r)^2 + Y/(1+r)^3 + Y/(1+r)^n$ .

future  $Y$ 's, will yield a present value of these future incomes just equal to the cost price of the capital good,  $C$ .

Now, said Keynes, compare the results just obtained with those which will obtain when the future revenue stream of the capital good is discounted at the *current market rate of interest* (on investments of this type) for borrowed funds. If the interest rate is *less* than the marginal efficiency of capital (as just defined), then the present value of the future income stream, obtained with market rate of interest as the discount factor, will be greater than the cost of the investment, and it is worth while to make the investment. On the other hand, if the market rate of interest is greater than  $m$  (MEC), the present value of the income stream will be less than its cost price, and the businessman will not make the investment.

We are thus back at our original point of saying that if the marginal efficiency of capital is greater than the interest rate, the investment will be undertaken, and if the marginal efficiency of capital is less than the interest rate, the investment will not be made. The equilibrium level of investment (*i.e.*, the level of investment at which the businessman will cease investing) is where the marginal efficiency of capital equals the rate of interest.

### ***The Effectiveness of the Interest Rate as a Rate of Discount Is Questionable***

There are numerous reasons for doubting that changes in the interest rate itself play as strong a role in the making of investment decisions as has been accorded them, traditionally, by the classical school.<sup>26</sup> These reasons involve the nature of a dynamic economy, with its accompanying uncertainty of the future, the behavior of businessmen in connection with attitudes toward obsolescence, the role of depression psychology, the methods of financing investment, as well as numerous recent empirical studies made on this subject.

<sup>26</sup> The classical school, of course, viewed the interest rate as influencing *savings* decisions, as well as those dealing with investment commitments. Thus disparities in savings and investment were overcome by appropriate changes in the interest rate, which reacted on *both* investment and savings plans. The process by which this happens and the criticisms which have been leveled at it by members of the Keynesian School and others are discussed at length in Chapter 2, pp. 59-60, and in Chapter 8, pp. 259-260 and 267-274, to which the reader is referred; there is no need to repeat them here.

In the first place, it is only in a (very unreal) world of perfect certainty about the future that the interest rate alone would be used as the rate of discount. Unfortunately, perhaps, no one has ever been found to equal Merlin in ability to predict the future. And the future of the real world is a mass of uncertainty and risk. Uncertainty about the future status of *aggregate* demand, and of the demand for a *particular* product, uncertainty about the rate of technological progress in a particular industry, which may render existing production processes obsolete, etc.—all these factors contribute to the “sea of darkness” which surrounds the minds of businessmen in their quest for knowledge of the future.

The result of this uncertainty is that businessmen discount estimates of future revenues to a certain extent *over and above* the interest rate in order to allow for this uncertainty. In other words, they incorporate risk and uncertainty into the future earnings of capital goods by adding the risk factor to the interest rate, so that the discount rate *exceeds* the interest rate by the risk factor, and the present (discounted) value of the future earnings of the capital good is that much lower.<sup>27</sup> If the risk and uncertainty components of the discount rate exceed by very much the interest portion of the discount rate, we have a basis for believing that changes in the interest rate will not have a significant influence on the discount rate, and therefore, on investment decisions. In the world of uncertainty and risk that surrounds the investment decisions of businessmen, there may be many situations where the uncertainty element largely dominates the interest factor, thereby nullifying significantly the effectiveness of changes in the interest rate.

It was mentioned above that one of the risk factors arose from the constant threat of obsolescence as a result of technological progress. The possibility of having a new piece of equipment being rendered obsolete in a short time after purchase plays a very

<sup>27</sup> It is possible to treat risk and uncertainty *alternatively* by raising the interest rate by the amount of the discount factor or by *lowering* the value of the estimated future *incomes*. Either way, the results are the same. We have chosen the former procedure in order to emphasize this potential source of weakness of changes in the interest rate as a major influence on investment decisions. It might also be noted that the value of the risk factor is purely a matter of subjective estimate on the part of businessmen.

dominant role in the thinking of the modern businessman. Its chief manifestation takes the form of a widespread desire on the part of many businessmen to recover the value of an investment in a capital good within a period of one to five years. The significance of this phenomenon for the problem at hand is that such practices shorten the discount period considerably. By the very nature of the discount formula, however, it is only the discounted prices of outputs in the *distant future* which are very sensitive to changes in the rate of interest; the sensitivity of discounted prices of outputs in the near future to changes in the interest rate is very slight. Accordingly, the shorter the discount period, the less sensitive the values of the (near) future revenues streams to changes in the interest rate. If the fear of obsolescence tends considerably to shorten the expected life span of a new capital good, then it inevitably tends also to limit the effectiveness of changes in the interest rate on investment decisions.

This last point is further emphasized by the effect that the pessimistic psychology that ordinarily accompanies depressions has on the length of the discount periods. The unfailing companion of depression-induced pessimism is the refusal of businessmen to make long-range plans, because of the (psychologically) greater uncertainty that attaches to the future during such periods. But long-range investment plans are necessary if there are to be future outputs whose discounted values are significantly affected by changes in the interest rate. If depressions reduce the length of investment planning periods, they also serve to reduce the effectiveness of changes in the interest rate on investment plans, and this at a time when the interest rate is suggested as an important device for assisting us out of depressions.<sup>28</sup>

<sup>28</sup> See J. R. Hicks, *Value and Capital*, 2nd ed. (London, Oxford University Press, 1946), pp. 262-263. Professor Hicks also suggests another limitation on the interest rate as an effective discount factor. We have indicated that the interest rate affects, primarily, the discounted values of distantly future revenues. However, the farther into the future we plan, the greater the role of the uncertainty component in the discount rate, "just because the uncertainty of the future price increases" as we move farther into the unknown future. The risk component of the discount rate in the far distant future may completely snow under the interest rate component, with the result that changes in the latter affect least those outputs which, without the risk factor, they would most affect. Cf. pp. 225-226.

There is a class of investment which provides an important exception to the points developed in connection with obsolescence and depression psychology. This category of investment comprises those types which are associated with the public utilities. In the public utility industries, the risk component in the discount rate is almost certainly small. One reason is, of course, the monopolistic position in which virtually all public utilities find themselves, as a result of government enfranchisement. This position frees them, to a large extent, also from the pressures of obsolescence, for these pressures largely emanate from the forces of competition. In addition, the demand for the product produced by public utilities is, by and large, a comparatively stable one. This contrasts sharply with the demand for the commodities of most manufacturing industries. A stable demand, even during the ups and downs of the business cycle, is, of course, a great stabilizing influence on future revenues. For these reasons, the planning, and therefore, the discount, period in these industries is long, and at the same time, the discount rate consists primarily of the rate of interest (without much risk element, that is). Investment in these industries, then, is rather sensitive to changes in the **interest rate**. Residential construction, which also appears to be somewhat sensitive to changes in the interest, plus the more important public utilities investment, has been found to amount to 25 per cent of gross capital formation.<sup>20</sup>

Another interesting, if somewhat irrational, factor which makes business impervious to changes in the rate of interest is the great emphasis today on *internal* sources of funds to finance investment projects of the large manufacturing corporations. On the basis of rational (profit maximizing) behavior, the businessman should compare the marginal efficiency of capital of a contemplated investment in his own business with the interest rate the market is offering for funds to finance a similar type investment elsewhere. If the latter exceeds the former, the firm should lend its funds out rather than invest them in its own business. It seems, however, that as soon as business firms begin to rely largely on such internal sources of investment funds as undistributed profits and depreciation re-

<sup>20</sup> See F. A. Lutz, "The Interest Rate and Investment in a Dynamic Economy," *American Economic Review*, XXXV (December, 1945), p. 826.



serves, etc., they tend to become increasingly less concerned with changes in the interest rate. Thus the investment plans of many of our large corporations are made on the basis of factors which do not include the interest rate on investments elsewhere (*i.e.*, the market rate of interest).

Up till now the discussion has leaned heavily on *reasoning* from certain empirical knowledge of the economy and the behavior of businessmen. However, there have been made in recent years innumerable empirical studies which bear out the arguments adduced above for doubting the effectiveness of changes in the interest rate in influencing the investment decisions of businessmen. Some of these studies rely on the questionnaire technique for information. Others rely on the statistical technique of multiple correlation. This latter group studies the significance of the interest rate on investment by observing the degree of correlation between changes in investment, the rate of interest, and numerous other variables that might play a decisive part in the making of investment decisions, such as changes in the national income, current and anticipated sales, the stock of capital, liquid assets, etc. None of these studies find a statistically significant correlation **between** investment and interest rates when the correlation between investment and some of the other variables, like sales, liquid assets, and the stock of capital, is taken into account. Similarly, in the questionnaires, all the businessmen indicated that changes in the rate of interest exercised very little influence on their investment plans. In the footnote below is found a brief list of some of the studies made.<sup>30</sup>

It may be argued, with some force, that undue emphasis has been placed on the interest rate as the medium through which wage and price reductions affect investment. In addition to releas-

<sup>30</sup> J. Tinbergen, *Statistical Test of Business Cycle Theories, I. A Method and Its Application to Investment Activities* (Geneva, League of Nations, 1939); H. D. Henderson, "The Significance of the Rate of Interest," *Oxford Economic Papers*, No. 1 (October, 1938), pp. 1-13; J. E. Meade and P. W. S. Andrews, "Summary of Replies to Questions on Effects of Interest Rates," *op. cit.*, pp. 14-31; P. W. S. Andrews, *Manufacturing Business* (London, Macmillan & Co., Ltd., 1949); J. F. Ebersole, "The Influence of Interest Rates on Entrepreneurial Decisions in Business," *Harvard Business Review* (Autumn, 1938), pp. 35-39. For a more detailed bibliography on the subject, see *Readings in Business Cycle Theory* (Philadelphia, The Blakiston Company, 1944), pp. 471-476, especially pp. 474-475.

ing cash from active cash balances for speculative hoarding, wage and price cuts, we have seen, release cash which may be used for precautionary hoarding. Moreover, the fall in prices, to the extent that it occurs, increases the *real value* of liquid assets, which is equivalent to a general increase in liquidity. It is then possible that the entire demand schedule for loanable funds (the marginal efficiency of capital schedule) will *shift upward* in position. Such a shift would obviously increase investment, even if the interest rate did not fall at all.

The answer to this is that *during depressions* the effects of a general increase in liquidity on the position of the investment demand schedule are, at best, likely to be small. The reason is that the deep pessimism and widespread uncertainty that prevails in depression periods may make the demand for precautionary liquidity well nigh insatiable. These factors, plus the low level of national income, and thus sales, also, discourage the undertaking of long-term investment projects. Moreover, the effects of speculative hoarding cannot be ignored, even in this case. Whether the interest rate significantly affects the investment decisions of businessmen or not, it does significantly affect the values of existing assets, including securities. And this factor may still continue to absorb large increments of new cash or higher valued existing cash.

Certainly, the experience of the thirties should convince us that attempts to increase investment either through the interest rate or through actions which built up the general liquidity position of large segments of the community were all futile. The tremendous expansion in the money supply, together with the general decline in the price level, both worked toward these ends, to no avail.

It should be noted in conclusion that if the effect of wage cuts on investment is small because of the factors indicated above, and necessitates large and continuing reductions in wages, the result may actually turn out to be a *contraction* in output and employment. Employers may hold back production in anticipation of a further reduction in wages, with the inevitable consequence that employment will be curtailed in response to the decline in wages. There is little doubt therefore, that if the wage cuts are to be at all effective as a stimulus to employment, there must be assurances

that they are *final*. At the same time, if wage cuts are relied upon to reduce the rate of interest, and they have little effect in this direction, it might be difficult to persuade the business community that the cuts that do take place are really final.

### *Wages and the Propensity to Consume*

Many economists of the classical school have emphasized the stimulating effects that a decrease in wages may have on *consumption*, as well as on the rate of investment. The more traditional basis for such a position would be that the general reduction in wages will result in a general reduction in prices, as marginal costs fall under the pressure from lower wage rates. The lower prices will then stimulate consumption, via a rise in the propensity to consume as a result of the lower general level of prices. Such an approach represents a somewhat dubious attempt to apply certain principles relating to the price and demand for a *particular* product to the problem of *aggregate* consumption.

More recently, Professor Pigou, whom we have referred to as the classical school's most able proponent, has developed a more sophisticated approach to the relationship of the general price level to aggregate consumption, based on more recent tools of analysis. The original Keynesian argument that the problem relating to the demand for liquid cash balances is pertinent only to the problems of interest rates and investment is somewhat narrow. Many surveys made in recent years indicate that the state of liquid cash balances also is an important influence on the rate of *consumption*. There is abundant evidence that the more liquid people are, the greater will be the rate of consumption out of any *given* income. That is to say, there is a *direct* relation between the degree of liquidity and the propensity to consume.

Professor Pigou has argued that the fall in prices induced by the reduction in the general wage level will increase the *real* value of cash balances and other forms of accumulated savings (by implication, mainly government securities). Thus just as people exhibit the tendency to spend more on consumption when the value of their liquid assets is increased, say, by an expansion in the money supply or an increase in the amount of government bonds

outstanding, so they will consume at a higher rate if the value of their liquid assets is increased by a fall in the price level. This latter relationship (between the *real* value of liquid assets and consumption) has come to be known as the "Pigou effect." The increased consumption out of any given income as a result of the Pigou effect may be interpreted as a rise in the position of the propensity to consume."<sup>1</sup>

One answer to this case involves the *extent* to which the consumption function responds to an increase in the (real) value of liquid assets. If the effect of the increased value of liquid assets on the consumption function is small, wage and price reductions may become a dangerous maneuver. For it will then be necessary to make large and continuous wage and price cuts, giving rise to employer expectations of further wage and price cuts. The result would then be a *contraction* of production and employment. This danger is precisely the same as that discussed in connection with the effects of wage and price reductions on investment.

Another answer to this case that lower wages will stimulate consumption is implicit in the Keynesian system. On the basis of Keynesian theory, it is possible to argue that reliance for stimulating effects of general wage reductions on consumption alone is bound to be self-defeating, because the marginal propensity to consume is less than one. Thus optimistic expectations on the part of businessmen induced by the general wage fall are inevitably disappointed—unless the wage cuts stimulate investment as well as consumption. Any increase in output induced by the fall in wages will fail to generate enough consumption to absorb the *entire* increment in national income (so long as MPC is less than one).

<sup>1</sup> See A. C. Pigou, "The Classical Stationary State," *Economic Journal*, LIII (December, 1943), pp. 343-351, *idem*, "Economic Progress in a Stable Environment," *Economica*, n.s. XIV (August, 1947), pp. 180-188. See also the excellent article by Don Pantinkin, "Price Flexibility and Full Employment," *American Economic Review*, XXXVIII (September, 1948), pp. 543-564. In another article, T. C. Schelling, "The Dynamics of Price Flexibility," *American Economic Review*, XXXIX (September, 1949), 911-922, Mr. Schelling makes a case, not too convincing to the present writer, that expectations that price changes will continue, usually considered deflationary if prices are falling and inflationary if they are rising, will actually prove to accelerate the rate of price change and hence shorten the period of unemployment and, presumably, also inflation.

The above argument would hold only so long as the cut in wages did not result in an upward shift in the position of the propensity to consume itself. The Pigou effect is predicated on such a shift, however. For the statement that the increased real value of liquid assets, which originates in the fall in wage rates and the price level, results in an increase in the amounts spent on consumption at any given level of income clearly implies an upward shift in the consumption schedule. If this shift occurs, a higher equilibrium income is obviously feasible, despite the fact that the marginal propensity to consume is less than one.

It is necessary to posit reasons showing that the propensity to consume will not rise on the basis of the Pigou effects. Keynes has provided such a reason, which, from the standpoint of the general system of his analysis, is an *obiter dictum*, rather than an integral part of the general theory. This little *obiter dictum*, however, has caused many economists the world over to do some distinct recasting of their thoughts.

Keynes chided economists for failing to distinguish the effects of wage reductions in *particular* areas of industry from those which resulted from *general* wage reductions, that is, those which would take place in all areas of production.<sup>32</sup> When discussing the particular case, it is perfectly correct to concentrate the analysis of the effects of wage reductions on costs, ignoring the effects of these cuts on demand. When examining the effects of general wage reductions, however, one cannot, with real discernment, ignore the effects of wage reductions on demand as well as costs.

If, for example, wages are reduced in a single industry, marginal costs might be expected, *ceteris paribus*, to change in the same direction. Effective demand for the products of the industry might fall, because of the decreased expenditures induced by the fall in wages. However, it is likely that the workers in this industry spend only a small fraction of their incomes on the products of this industry (that is to say, their decrease in demand is likely to be diffused over the entire economy), so that the effects of the wage cuts on demand may be ignored in this case. The same is likely to be true, though to a lesser degree, of a wage decrease applied to

<sup>32</sup> *General Theory*, pp. 257-260.

a given sector of the economy. Thus in these two cases we may expect costs to fall more than demand, and output and employment to be stimulated by the wage reduction.

But when a wage reduction is applied to the economy as a *whole*, no longer may the effects on demand be validly ignored. As a matter of fact, there is reason to believe that the propensity to consume will be forced downward by the wage reduction. The wage reductions will bring about a redistribution of the national income from wage-earning to non-wage-earning groups. Since the latter as a group have a lower (marginal) propensity to consume than the former, the shift in income will tend to lower the propensity to consume and thus the rate of consumption for the nation as a whole, with depressing effects on income and employment. Moreover, the multiplier effects of the decline in the consumption function will push income, consumption, and possibly induced investment, down still more. These redistributive effects of wage cuts may nullify, more or less, the effects of wage reductions predicated on the Pigou effect.

It has been suggested that Keynes exaggerated the possible effects of a redistribution of income.

Maintenance of the prices of the other variable factors in the face of a wage cut would encourage substitution of labor for these factors: such substitution would not only be directly favorable to employment of labor but would also diminish or reverse the transfer of income from labor to non-wage-earners.<sup>11</sup>

This statement does not seem to suffice as a reply to Keynes' position, for there is much reason to doubt that it would apply in the short run. The evidence is substantial that the technical coefficients of production (that is, the proportions in which the factors of production may be used) are fairly fixed, at least in the short run. This is true for a number of reasons. The labor-machine proportions are usually narrowly confined by such things as technical limitations, shop customs, and even union rules. There is usually, also, considerably less than perfect divisibility in plant operations;

<sup>11</sup> See James Tobin, "Money Wage Rates and Employment," in S. E. Harris, ed., *The New Economics* (New York, Alfred A. Knopf, 1948), p. 574. Others have made the same point.

in other words, operations are to a significant degree interdependent. Thus additions to the labor force often entail costly readaptations of existing facilities and organization, which completely offset the effects of lower wage rates.<sup>34</sup>

Moreover, numerous recent cost studies indicate that for a considerable range of variation of output in the short period, marginal costs appear to be largely constant. Such constancy may arise from a large amount of divisibility of plant operations, which would seem to contradict the statement made in the preceding paragraph. However, the two statements are not actually contradictory. For if marginal costs are to be constant, divisibility of plant must be accompanied, at the same time, by considerable unadaptability of each unit of the fixed plant to variations in the quantity of the variable factors, that is, technical coefficients of production have to be fairly rigid. Then constant costs obtain simply by bringing into use successive additional units of the fixed plant. Of course, both having rigid technical coefficients, a divisible plant will still be more sensitive to wage reductions than one whose operations are marked by strong interdependency.

The decisions to alter the ratios of input factors are also sharply influenced by such things as estimates of obsolescence of machines or their products, by the risk of large losses on abandoned sunk investments, etc. The influence of factor prices is often swamped by these considerations.<sup>35</sup>

Actually, one does not have to assume complete fixity in the proportions in which the variable factors may be employed. If they are fixed to a large extent, however, and there appear to be ample reasons for believing this to be the case, then the effects of factor

<sup>34</sup> An important exception to these statements is the service industries. Even in the short run, these industries show considerable adaptability to variations in the size of their labor supply, because of the negligible amounts of capital equipment employed by them. Reductions in wage rates might, *ceteris paribus*, easily induce them to hire new labor, if the latter were not deterred from seeking employment there by considerations other than wages, such as might arise in the case of domestic employment. These industries may some day grow to sufficient proportions to overcome largely the limitations of fixed technical coefficients, suggested in the text. As yet, this does not appear to be the case.

<sup>35</sup> Other factors limiting changes in the ratios of capital and labor are discussed at some length in Chapter 6, pp. 226-227.

price variations on the allocation of variable factor inputs are sharply limited, in the short run at least. The significance of this possibility for the problem at hand is that wage cuts might have to be too great to be effective, too great, that is, for political and social stability.<sup>36</sup>

If it is argued that the problem of fixed production coefficients is essentially a short-run problem, and that, in the long run, producers will reapportion factor inputs in accordance with whatever change in their relative prices has occurred, we may agree. But then would twenty million or so unemployed be willing to wait five years or more while the long-run effects of lower wages were working themselves out? It must be remembered, too, that the pessimism characteristic of depressions creates a tendency to *postpone* long-run adjustments.

An argument of stronger substance in opposition to Keynes' thesis concerning the consumption-damping, redistributive effects of wage cuts is provided by recent empirical studies.<sup>37</sup> While by no means conclusive, these studies show that within the income groups extending up to the \$5000 (yearly) income brackets, that is, the lower and middle income groups, the differences in the marginal propensity to consume are small. To the extent that this is true, whatever portion of income is redistributed among these groups will exert virtually no influence on the consumption function. It is well-nigh impossible, however, to determine precisely to what extent income is redistributed among these income groups by wage reductions.

*Conclusions on Wage Adjustments.* What are we to conclude as

<sup>36</sup> Mention should also be made of Professor W. Leontief's study of the structure of the American economy, *The Structure of the American Economy, 1919-1929* (Cambridge, Mass., Harvard University Press, 1941). See also *idem*, "Input-Output Analysis and Its Use in Peace and War Economies," *American Economic Review*, XXXIX (May, 1949, supplement), pp. 211-225. Leontief concludes that it is accurate to regard the production coefficients of large areas of industry as constant.

<sup>37</sup> See H. Lubell, "Effects of Income Redistribution on Consumer's Expenditures," *American Economic Review*, XXXVII (March, 1947), pp. 157-170; *idem*, "Correction," *ibid.* (December, 1947), p. 930; and R. A. Musgrave and Mary S. Painter, "Impact of Alternative Tax Structures on Consumption and Saving," *Quarterly Journal of Economics*, LXII (August, 1948), pp. 475-499.



to the effectiveness of wage reductions in correcting a situation of underemployment equilibrium? Clearly the answer is beset with all kinds of possibilities, both for the consumption function and the investment schedule. Wage reductions may work under certain conditions, but, in the opinion of the present writer, their effect in most situations is likely to be too small to be of much importance. This opinion is grounded in the belief that the redistributive effects of such reductions diminish the chances for the propensity to consume to rise to any significant degree, coupled with the belief that the rise in the consumption function in response to increased liquidity is, *during depressions*, likely to be small. The result of this latter point will then tend to be a period of protracted wage and price cuts (assuming these to be possible), giving rise to perverse expectations that these cuts will continue. In such circumstances, the consumption function (and investment function) may well *fall*. Moreover, the investment demand for funds (that is, the marginal efficiency of capital) is inelastic with respect to changes in the rate of interest and, during depressions, to increases in liquidity. However, more empirical evidence is needed before any opinion on the matter can be conclusive.

It is important to restate a remark made a little earlier. Careful examination of the case made *for* wage reductions reveals that their efficacy is made contingent on their effects on cash balances, either to stimulate investment, via increased liquidity and/or low rates of interest, or consumption, because of the relationship between liquidity and the consumption function. This being the case, it is obvious that the same results may be achieved by enlarging the money supply, and relying on it to bring about the desired results. Such a course of action has the distinct advantage of avoiding whatever untoward, political, social, and economic circumstances may possibly be attendant upon wage reductions.

If, indeed, labor were always in a position to take action (and were to do so), whenever there was less than full employment, to reduce its money demands by concerted action to whatever point was required to ~~make~~ ~~interest~~ money so abundant relatively to the wage unit that the rate of interest would fall to a level compatible with full employment, we should,

in effect, have monetary management by Trade Unions, aimed at full employment, instead of by [the central monetary authorities].<sup>38</sup>

### *Remarks on the Liquidity Preference Theory of Interest*

The Keynesian theory of liquidity preference has been most often criticized for being too narrow as an explanation of the rate of interest. The rate of interest, according to the liquidity preference theory, measures the rate of preference people have for holding cash as opposed to holding securities, that is, the interest rate is the price necessary to overcome the desire to hoard cash balances.

It has been argued by many economists that the interest rate influences and, in turn, is influenced by other, equally important factors, such as the rate of saving and the marginal efficiency of capital. These criticisms may be best stated by discussing the most important alternative theory of interest, namely, the *loanable funds* theory of interest.

### *The Loanable Funds Theory of Interest*

This theory is the neoclassical school's successor to the more classical theory of interest. The latter is best described as a savings-investment theory of interest.<sup>39</sup> For our present purposes, it suffices to say that the classical economists envisaged savings as the sole source of supply of funds for investment. The more recent loanable funds theory made the advance of expanding on the sources of supply of funds which very definitely influenced the rate of interest. These sources include, in addition to supply of current savings, the volume of outstanding commercial bank credit, amortization quotas (that is, funds released from embodiment in fixed and working capital), and funds contained in idle cash balances, *i.e.*, hoards.<sup>40</sup>

<sup>38</sup> Keynes, *The General Theory*, p. 267.

<sup>39</sup> See also, pp. 268–271 in Chapter 8.

<sup>40</sup> It is possible to treat hoarding as a decrease in the supply of loanable funds available for investment or an increase in the *demand* for loanable funds, in addition to the demand deriving from investment. It is a matter of indifference to the final effects; in either event, the rate of interest would rise. The same is true in the handling of dishoarding. Dishoarding may be treated as a decrease in the demand for loanable funds or an increase in the supply; in either case, *ceteris paribus*, the rate of interest would fall.

The demand for loanable funds, on the other hand, consists of the schedule of marginal efficiency of capital at various rates of investment plus the demand for investment funds on the part of consumers

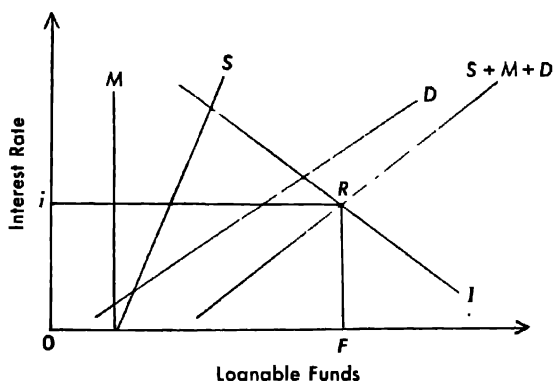


*Figure 30. The Loanable Funds Theory of Interest*

to finance the purchase of consumer durables. The loanable funds theory is depicted in Figure 30.

In this figure,  $I$  is taken to be the demand curve for loanable funds based on the demand for investment in durable producer and consumer goods.  $M$  is the supply of bank credit; it is assumed to be determined by the monetary authorities and thus independent of the rate of interest. This is done for purposes of simplification; in reality, insofar as banks tend to lend more at higher interest rates and have excess reserves, it is probably somewhat elastic to the interest rate. The  $S$  curve is the supply curve of current savings. This curve is assumed to be somewhat elastic with respect to changes in the interest rate, although it is probably not very elastic. It is generally agreed that changes in the level of income are much more important as the determinant of savings. The effects of changes in the national income would be indicated by shifts in the position of the savings schedule. A shift upward and to the left would indicate a fall in national income, so that less savings would be forthcoming at each rate of interest; a shift downward and to the right would mean that the national income had risen, so that more savings would be forthcoming at each interest rate. The curve  $D$  is the

curve showing the supply of funds that results from dishoarding; it is assumed to be fairly elastic with respect to changes in the interest rate, in accordance with the theory of liquidity preference. This curve falls to the right when national income rises, and rises to the left when national income falls. Summing the latter three curves, we get a curve which looks something like the curve  $S + M + D$ , which is the supply curve of loanable funds. Where the demand and supply curves intersect, at the point  $R$ , is determined the rate of interest,  $i$ , and the (equal) amount of funds that will be supplied and taken at this rate,  $OF$ .<sup>11</sup>

It is the contention of those who advocate the use of the loanable funds approach as opposed to the liquidity preference approach in explaining the rate of interest that the former allows for more influences on the interest rate than is permitted by the latter. For example, an increase in consumption decreases savings and thus raises the rate of interest, and vice versa. Similarly, changes in the marginal efficiency of capital influence the rate of interest. An increase in the marginal efficiency of capital, for example, and, therefore, investment, will raise the demand for funds, and, therefore, tend to raise the rate of interest, and vice versa. In contrast to this, it is maintained, the liquidity preference theory confines the influences on the rate of interest to the demand for and supply of money for hoarding. While the loanable funds theorists admit that hoarding definitely influences the rate of interest, they assert that it is not the *only* influence.

### *The Two Interest Theories Are Virtually the Same*

In recent years many economists have come to realize that the two interest theories are very similar, and in fact can be used to express much the same thing.<sup>12</sup> As a matter of fact, the method by

<sup>11</sup> The reader may be wondering what happened to the amortization quotas, which are prominently mentioned by the loanable funds theorists. The fact is that they were purposely omitted. If they were to be included in the supply curve of funds, then, correctly, the demand for funds for replacement purposes should also be included in the demand curve,  $I$ , so that the latter would represent gross investment, rather than the more usual net investment.

<sup>12</sup> See, for example, B. F. Haley, "Value and Distribution," in H. S. Ellis, ed., *A Survey of Contemporary Economics* (The Blakiston Company, Philadelphia and Toronto, 1948), pp. 41-43. This article also contains citations of

which these other influences may be incorporated into the liquidity preference approach was hinted at in the discussion of the theory itself earlier in this chapter. An increase in investment will also raise the rate of interest in the liquidity preference approach, because it will entail the use of more cash for *transactions* purposes. With the total supply of cash remaining unchanged, there will be less available for hoarding purposes, and the rate of interest will rise. In exactly the same way, an increase in the propensity to consume (decrease in saving) will raise the rate of interest. An increase in the rate of consumption implies the need for more cash for transactions purposes; the supply of money remaining unchanged, there is less cash available to satisfy the speculative motive, and the interest rate will rise. We have come to the same results through the liquidity preference approach as we did via the loanable funds theory. The reader may verify this process of reasoning by referring to Figure 27 and the figure in footnote 12 of this chapter.

This manner of handling the influence of the demand for funds for investment on the interest rate, together with the effects of changes in the propensity to consume, actually represents interpolations into the original exposition of the liquidity preference theory as found in *The General Theory*. Keynes himself later recognized some of the inadequacies of the original statement, particularly those relating to the influence of the demand for investment funds on the interest rate. It remained for other eclectics to point out the influences changes in the propensity to save (consume) might exert on it.

In view of the interchangeability of the two approaches to the explanation of the rate of interest, it is the opinion of the present writer that it is a matter of complete indifference and personal choice, which one of the two approaches is used. Because of the similarities, too, it is probably best to say that Keynes did not forge nearly as new a theory of the rate of interest as he and others at first thought. Rather, his great emphasis on the influence of hoarding on

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some of the other attempts to show that the two theories amount to the same thing. For a different viewpoint under dynamic conditions, see L. R. Klein, "Stock and Flow Analysis in Economics," *Econometrica*, XVIII (July, 1950), pp. 236-241; see also the four other notes on this general topic in the same issue of this journal.

the rate of interest constituted an invaluable addition to the theory of interest as it had been developed by the loanable funds theorists, who incorporated much of Keynes' ideas into their theory to make it more complete.

### *The Importance of Shifts in the Schedules of Liquidity Preference*

It has been variously suggested that too much emphasis has been placed on the extremely elastic shapes of the schedules of liquidity preference as the factor responsible for rigidity of the interest rate in the downward direction. Shifts in the *position* of the schedule may be just as responsible for these rigidities. We have just noted the role that shifts in the liquidity preference schedules, induced by changes in consumption or investment, may play in the determination of the rate of interest. We observed that an increase in the marginal efficiency of capital and, therefore, investment, would cause the interest rate to rise by drawing on the cash balances used for speculative purposes to increase the amount of cash available for transactions purposes (assuming the total money supply unchanged). Presumably, a decrease in investment would lead to a fall in the interest rate by releasing cash from active balances for hoarding.

However, this may not necessarily follow. When the marginal efficiency of capital and investment fall during depressions, the same pessimism that lowers the demand for investment (transactions) funds leads to an increase in the demand for cash for *precautionary* purposes. Under the pressures of depression-borne pessimism business firms, as well as private individuals, exhibit a distinct tendency to build up their precautionary cash balances. The seeming imminent threat of reduced incomes or total unemployment causes many people to "retrench," to build up their cash margins against calamity in varying degrees. Similarly, businessmen act in the same manner, sometimes under the direct pressure of bankers who are trying to ensure repayment of their loans, sometimes under more indirect banker pressure, which involves the widely known attention bankers pay to a firm's cash position in the granting of new loans. Often firms build up their safety margins in anticipation of widespread defaults on accounts receivable and

other forms of debt, or because of the possibility of pressure being brought to pay on accounts payable and other forms of liabilities, or simply because they anticipate a general curtailment of lending by banks. All these forces lead to the building up of precautionary cash balances, thus preventing the release of cash for speculative purposes, and, therefore, the decline in the rate of interest, which normally might be expected to follow a decline in investment. Attempts by the monetary authorities to lower the interest rate by expanding the money supply might easily be frustrated by the absorption of the increased money into precautionary balances to further broaden the margin of safety. These increases in the demand for precautionary balances result in corresponding (upward) shifts in the schedules of liquidity preference proper. These upward shifts in the liquidity preference schedules could just as easily account for the rigidity of the interest rate downwards as the supposedly extremely elastic *shape* of these schedules. Either or both of these two influences may account for rigid interest rates. Only empirical investigation can reveal the answer to the problem.

### ***Liquidity Preference and Consumption***

One final point may be briefly mentioned. It has been correctly noted that people's desires for liquidity not only affect the rate of interest and investment, but also the propensity to consume. Keynes' initial presentation of the liquidity preference theory, in failing to take cognizance of this (direct) relationship between people's state of liquidity and their expenditures on consumption, was somewhat inadequate. The manner in which consumption, as well as investment, is influenced by liquidity has been discussed earlier in connection with the so-called Pigou effect.

### ***An Appraisal of Secular Stagnation***

The stagnation school predicates its thesis of a long-run deficiency of investment on an analysis of the autonomous factors of growth. Their position is that there is nothing inherent in the economic systems of the capitalistic countries to ensure a rate of net investment necessary to provide full employment. Net investment, they maintain, is a product of change and growth in the

economic system. In the nineteenth century, the rate of annual investment was immense, the product of such things as revolutionary technological advances—the railroads, etc. together with the enormous investments stimulated by the opening of new territories and the rapid growth of population. With the advent of the twentieth century, basic changes in these growth factors began to manifest themselves. Population growth began to slow down at an alarming rate, until at present, the rate of growth is already beginning to approximate zero. While there is still room for some territorial expansion, this formerly great outlet for new investment has been considerably narrowed. Furthermore, although there may be grounds for doubting that the rate of technological progress will slow down, there is no basis for a belief that it will rise sufficiently to absorb enough savings to compensate for the decline in the other two growth elements. At the same time, however, these mature economies have maintained, and even increased, their rates of annual saving, with the results that the pressure on unemployment has been growing.

It must be noted that the stagnation thesis contains the implicit (and correct) denial that the mere process of consumption is sufficient to ensure net investment. We have seen, in connection with the study of the acceleration principle, that once consumption reaches any particular level, this level can be maintained indefinitely with only the replacement of worn-out capital, and replacement, of course, can be financed out of depreciation reserves without resorting to new current savings at all. Failure to understand this leads to faulty thinking. It has been widely argued, for example, that as long as there are so many people whose even basic wants are unsatisfied, there remain untold opportunities for new investment.

What is really meant, however, is that there are broad opportunities for an increase in the nation's propensity to consume. That is to say, instead of building up new territories and looking for new products to produce, we might well expend our resources to raise the living standards of the existing population. This may be perfectly true, but it is not a solution of the *investment* problem as such. This solution does not really solve the investment problem by providing new vistas for investment, but rather suggests raising the



propensity to consume in order to ensure full employment incomes.

The mistaken reasoning presumably originates in the belief that the increased consumption will probably require expanded plant and equipment. The answer should now be apparent. Once plant and equipment were expanded to meet the higher rate of consumption (higher propensity to consume), investment would fall back to the level of *replacement* demand, which would be financed from *depreciation* allowances. Again, current new savings would not find sufficient outlet in net investment. Of course, the propensity to consume could be raised some more, but the ultimate end of this process is an economy in which there is no net investment, that is, national income equals consumption (since net investment is now zero).<sup>43</sup> Of course, this is a solution to the problem, but probably not the one of those who take the position just cited.<sup>44</sup>

### *Stagnation and Investment*

One cannot very well quarrel with the stagnationist position that many of the enormous investment outlets that characterized the nineteenth century have largely disappeared. Certainly, this is true of population growth. There is little doubt in the present writer's mind that this factor played an extremely important role in the huge volume of investment which characterized the last century. We have observed that population growth stimulated investment because of the necessity of providing people with housing, public utilities, transportation and communication facilities, etc. The significant thing, for our purposes, is that much of this investment did not have to wait upon the discovery of new methods of production

<sup>43</sup> This, of course, is John Stuart Mill's classic Stationary State.

<sup>44</sup> In Chapter 15, we shall discuss as one of the solutions to a stagnant economy, should it exist, the raising of the nation's propensity to consume. What is suggested in the text, however, is that the people who look to the unsatisfied wants of large numbers of the present population mistakenly envisage these wants as the basis for an enormous outlet for net investment. The analysis of Chapter 3 should show that this is true only insofar as a part of total investment is derived from current consumer demand. What these arguments really suggest as the solution of the problem of the excess of saving over investment at full employment is not so much an increase in investment outlets as *decrease* in the propensity to save (or an increase in the propensity to consume).

and transportation, etc., but was absorbed into investment outlets within the framework of the then existing stock of technological knowledge. To the extent that capital formation would have consisted only in the substitution of new techniques and products for old, there is little doubt that the rate of investment during the last century would have been considerably less than it was.

If the marginal efficiency of capital has been depressed by the disappearance of these growth factors, *viz.*, territorial expansion and population growth, there is also little hope that changes in the interest rate will ever provide a solution to the problem. But have we really come to an end of these growth factors to the extent that the stagnationists believe? This is the crucial question to be asked in examining the stagnationist thesis. Unfortunately, the answer necessarily involves us in what has been called, very appropriately, "the great guessing game."

### *Spontaneous Changes in Wants and Techniques*

There is one group of writers who, if the stagnationists may be said to represent the ultimate in pessimism, may be fairly represented as being the essence of optimism.<sup>45</sup> This group of writers might be called the "Spontaneity School." They believe that there will always be "spontaneous" changes in the tastes of consumers and in the techniques of production, and these changes will always be of such magnitude that within broad limits there is virtually no limit to the ability of capitalistic economies to absorb current savings into investment. Growth always induces such rapid changes in the pattern of consumer wants and production techniques that the rate of obsolescence alone will be sufficient to provide the required investment outlets.

There may or may not be an important grain of truth in this position, but it strikes the present writer as smacking too much of "wishful thinking." The position is based on the postulate that there

<sup>45</sup> See, *inter alia*, F. H. Knight, "Diminishing Returns from Investment," *Journal of Political Economy*, XLII (March, 1944), pp. 26-47; D. McC. Wright, "Professor Knight on Limits to the Use of Capital," *Quarterly Journal of Economics*, XLVIII (May, 1944), pp. 331-358; *idem*, "The Prospects for Capitalism," *A Survey of Contemporary Economics*, Philadelphia and Toronto, The Blakiston Company, 1948, pp. 457-459.

are forces *inherent* in the system that will generate, or, even, that can be made to generate, the required volumes of investment. Whether this is so, however, only the future can tell. The crucial question is whether or not the forces of change in tastes and techniques *are* spontaneous, and if so to what degree, and whether the obsolescence induced by these changes can provide the necessary investment outlets. There is no *a priori* answer to these questions, but the present writer finds himself unable to get enthusiastic over the prospects. The reader's guess, however, is certainly as good as his own.

### *Secular Stagnation and Foreign Investment*

There do seem to be more realistic prospects for investment outlets in foreign population growth and foreign investment, mainly in Asia, and to a lesser extent in Latin America. There are today vast revolutionary forces on the march throughout Asia. As in other centuries, the repercussions of these revolutionary movements may exert their effects on countries similarly backward, like the Middle East, and Latin America. These movements constitute the rumblings of vast giant populations awakening from an age-old lethargy and acceptance of poverty and misery, disease and famine, illiteracy and ignorance as the inevitable concomitants of human existence.

These are mighty forces which are at hand. At present, they seem to have been captured by the communist movement. However, it is a mistake to view the revolutionary forces as inspired solely by communism, for they have their origin in periods long before the present "cold war." The fact that the communists threaten to engulf the whole movement may be, in part, attributed to our own political ineptness.

It does not yet appear inevitable, however, that this new faith in the possibility of a life of greater abundance should be led and developed by the forces of communism. There is probably yet time for the countries of the West to step in and inspire these movements in the direction of the philosophy of the West. This, of course, is the essence of the Point Four program as envisioned by the present administration in the United States.

For countries possibly faced with the problem of economic maturity, of too little investment for the savings generated by full employment incomes, these movements in the East may be a god-send. Properly guided and stimulated, these movements may lay open whole new frontiers, frontiers which also contain within them populations which are in the stages of increasing rates of growth. These are investment outlets perhaps as great, if not greater, in potential scope, as any the West offered at the peak of its industrial growth. Whether the government invests directly, or directs, and possibly guarantees to some extent, private investment is not of basic significance, either, for the mature economies. The important thing is that in the countries of the East there lie outlets for investment of the dynamic type which characterized the United States during its nineteenth century growth from an essentially agrarian economy to, primarily, an industrialized one.

The stagnationists have foreseen some of the possibilities that are offered for investment in some of the backward areas of the world. However, most of their comments on the subject are dated some years before the eruption of the revolutionary movements which have come to the surface within the past couple of years. The recent explosions indicate that they, along with many others, may have greatly underestimated the nature and strength of the forces which have been at work to relieve these areas from the yoke of primitive colonialism.

Nevertheless, one is not entitled to go "overboard" yet at these prospects. There is an important area of *political* problems which have to be solved before this vast area of economic (investment) potential can become available to the West. Whether these problems will be solved sufficiently to allow the leaders of these movements to open their doors to Western capital remains to be seen.

Moreover, there are certain economic factors in the situation which may cause

the industrialization of Asia [to] follow quite a different pattern from that of America. Natural resources are probably less bountiful, rates of return are likely to be lower, much broader planning and coordination may be necessary, established social and political institutions may to

some extent present obstacles, the nations concerned may be unwilling to have foreign capital play a predominant part in their development,"

and, finally, there is the necessity of training a very backward labor force in the ways of mechanical production, which did not exist, for the most part, in America.

The answer to the very important question of whether these areas will provide the outlets for the full employment savings of the mature economies of the West is obviously outside the scope of economic analysis. It belongs rather to the arena of crystal-ball gazing. The reader is free to come to his own conclusions here, too. The future will confirm or discredit them.

### ***Stagnation and the Consumption Function***

One of the assumptions of a thesis of secular stagnation is, we have noted, the stability of the propensity to consume. The thesis implicitly and explicitly contains the belief that the propensity to consume will not rise sufficiently to close the gap between savings and investment at full employment incomes. However, there is evidence that while the propensity to consume is more or less constant in the short run, it displays a definite *secular* tendency to rise. The data on this subject indicate that over the fifty years preceding 1929, the *percentage* of income spent on consumption (*i.e.*, the *average* propensity to consume) has remained constant. Since national income was increasing at a rapid rate during this period, we may conclude that consumption must have been increasing at the same rate, yielding a stable ratio of consumption to national income. This, in effect means that there has been a secular rise in the consumption function.

The reason for this secular rise (in contrast with the short-run stability) of the consumption function lies in the constant upward shifting in the community's conception of a minimum standard of living. Things that were once luxuries are now considered indispensable necessities. Thus although the low-income groups receive money incomes greatly in excess of those of their forefathers,

<sup>40</sup> From "Secular Stagnation?" by Alan Sweezy, in S. E. Harris, ed., *Post-war Economic Problems*, p. 80, n. 1. Copyright 1943. Courtesy of McGraw-Hill Book Company, Inc., N. Y.

their expenditures on newly conceived "necessities" still permit them to do virtually no saving (in fact cause them to go into debt) out of the higher incomes.

This secular rise in the propensity to consume provides another possible way out from the threat of chronic unemployment. There is no guarantee, of course, that the upward shifts in the consumption function will occur rapidly enough in the future to reduce or close the gap between savings and investment at full employment, but these shifts do suggest certain possibilities in connection with public *policy*, that is, it is not entirely outside the realm of public policy to consider ways of getting the propensity to consume to rise even faster than it does of its own accord. This is a matter we shall have occasion to consider in Chapter 15, on the problems of public policy in connection with the business cycle.

The possibility of having upward shifts in the propensity to consume provide a possible means of escape from the specter of secular stagnation induces the present writer to quote a "stagnationist" who would defend his school's position against a certain brand of criticism. Many critics of the stagnationist thesis accuse it of being unduly pessimistic, of having a completely defeatist attitude toward the employment problem of the future. Professor Alan Sweezy objects, with some merit, to these accusations. That the stagnation theory is defeatist

. . . is true only from the point of view of those who regard investment as an end in itself. If, on the other hand, we take seriously what we learned and what we teach in elementary economics, *viz.*, that *consumption* is the final aim of economic activity, the implications of the stagnation theory are *optimistic*, not pessimistic. If the theory is correct, it means that society can devote a larger proportion of its resources in the future to satisfying current consumer wants, including the provision of more adequate medical care, better housing, more educational opportunities, etc. This is certainly anything but a gloomy prospect. People have trouble seeing it in its true light only because they are still thinking in terms appropriate to a scarcity rather than an abundance of capital.<sup>47</sup>

While it remains for the future to attest to or deny the validity of the stagnation thesis, the present writer concurs heartily in these sentiments.

<sup>47</sup> See Sweezy, *op. cit.*, pp. 81-82. *Italics supplied.*

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## CHAPTER 5

### **THE PURE MONETARY THEORY OF THE TRADE CYCLE**

Sufficient evidence has already been presented to the student of business cycles, both in this discussion and (in all probability) in his previous contacts with economics, to make clear the central position of monetary phenomena to any explanation of cyclical fluctuations. All writers are uniformly agreed that an elastic money system is a virtual *sine qua non* of cyclical fluctuations in business activity. No upswing could proceed very far without a money supply that readily increased in response to the demands of a cyclically expanding economy. While acknowledging its indispensable importance, most students of the business cycle regard the monetary mechanism as primarily a *passive* factor in the development of cyclical fluctuations. Certain writers, however, notably R. G. Hawtrey, whose theories we are about to examine, place full responsibility for the business cycle at the feet of money mechanism, particularly the commercial banking system. While not agreeing with Mr. Hawtrey's position, the present writer feels that his explanation provides an excellent description of the role of money during the periods of expansion and contraction of the business cycle. The monetary explanation advanced by Hawtrey may be quite neatly adapted to the period analysis discussed in Chapter 2, and the reader would profit by keeping this fact in mind throughout the following critique.

*Total effective demand* derives from the flow of *national money income*. As we have seen, national income consists of the sum expended on consumption and investment; that is to say, the amount of income received at any time depends on the amount of income



**spent** (on consumption and/or investment). As long as this flow of money income remains unchanged, the economy will tend to move along on an even keel. But, in fact, the money stream is often broken. Dishoarding of idle cash balances or the creation of bank credit may enlarge the stream of effective demand for goods, and precipitate an upward spiral. Conversely, a net increase in hoarding or contraction of bank credit has the effect of reducing the total monetary demand for current production and, in this manner, initiating a deflationary spiral.

Thus, for Hawtrey, the business cycle is purely a monetary phenomenon, predicated upon fluctuations in the national money income stream. Let us now proceed to analyze precisely the mechanism through which fluctuations occur.

#### THE MONETARY SEQUENCE OF A BUSINESS CYCLE

Basically, Hawtrey's theory devolves upon three main factors: (1) the strategic role of the wholesalers in the economy and their extreme sensitivity to changes in the discount rate; (2) changes in the flow of total monetary demand; and (3) the role of the so-called external drain and return of bank reserves.

#### *The Revival and Upswing*

A typical upswing might, according to Hawtrey, proceed along the following lines. Banks, confronted with the piling up of excess reserves, lower their discount rate in an effort to stimulate borrowing. Such a reduction in the discount rate is a great stimulus to the *wholesaler* (to whom Hawtrey refers as the "trader"). This class of businessmen is peculiarly sensitive to such changes because, unlike other producers, its members tend to carry their large stocks primarily with *borrowed* money. Moreover, the wholesaler usually makes his profit as a small fractional markup on the value of large, rapidly moving stocks of goods. Hence a small change in the discount rate affects his profits to a disproportionately large degree.

Wholesalers respond to the reduction in the bank rates by becoming much more willing to borrow from the banks in order to increase their stocks of commodities.<sup>1</sup> This is fully in accord with

<sup>1</sup> In addition, they also begin to dishoard any idle cash balances.

our earlier analysis, when we saw that, given the marginal efficiency of capital, a reduction in the rate of interest will lead to an increase in the level of investment. This is a special case of that more general proposition. That is, a reduction in the bank discount rate leads, initially, wholesalers to attempt to effect a net increase in their inventories.

The increased orders of wholesalers cause the manufacturers to raise their level of production and employment.<sup>2</sup> But the increased expenditures on the part of the manufacturers means additional income and monetary demand on the part of the factors of production. "Thus the whole amount of the funds created by the banks is received as income, whether profits, wages, salaries, rent, or interest, by those engaged in producing the commodities."<sup>3</sup> While these people may use some of their additional income to increase their cash balances, Hawtrey finds that they will spend the bulk of it. They spend it on goods they buy from traders, who now find their stocks declining. Thus, in attempting to increase their stocks in response to the lower interest rate, the traders actually create new consumers' demand "which tends to deplete their stocks almost as fast as they are replenished."<sup>4</sup>

The wholesalers find their desire for increased stocks still unsatisfied, so that they further increase their orders to producers. Productive activity increases still more, as does employment and consumer incomes. This means further increases in expenditures on the part of the income recipients and additional depletion of stocks. A spiral of cumulative expansion is set up, fed by the continuous expansion of bank credit and the dishoarding of idle cash balances.

### *The Crisis and Downswing*

If banks could continue to create credit indefinitely, the upward movement might proceed without stop. But sometime in the course

<sup>2</sup> Strictly speaking, it would be the manufacturers who, in the first instance, would borrow and use idle cash balances. The wholesalers would have no actual need to borrow until the first deliveries on the new orders had arrived.

<sup>3</sup> R. G. Hawtrey, *Trade and Credit* (London, Longmans, Roberts and Green, 1928), p. 90.

<sup>4</sup> *Ibid.*, p. 91.

<sup>5</sup> In effect, such an involuntary decline in inventories leads to a rise in the marginal efficiency of capital, which is a further stimulus to investment.

of the upward swing, banks find their cash reserves falling, so that they must not only refuse to lend any more, but must actually call in some of their loans in order to remain within the limits of the legal or customary reserve ratio." In addition, in order to curtail the demand for new loans, the banks raise the discount rate.

The resulting contraction of credit exerts a deflationary pressure on prices, on money income, and ultimately on the marginal efficiency of capital. The combined effect of a fall in the marginal efficiency of capital and a rise in interest rate is a strong damping of investments, particularly those made by traders, whose sensitivity to slight changes in the money rate has already been remarked. Wholesalers will attempt to reduce their stocks by curtailing their orders to manufacturers, and this will tend to reduce total debts to the banks. Manufacturers in turn will curtail their own levels of output and employment. The income of the factors of production will decline, and there will be a corresponding decline in monetary demand.

The immediate consequence of a decline of consumption demand is diminished sales, and increased stocks of unsold goods. But for smaller sales *smaller* stocks are required. The traders whose sales are diminished will seek to reduce their stocks by ordering from the producers something less than the amount of goods necessary to replace those sold. And producers, with output falling off, will seek to reduce their stocks of materials and intermediate products by ordering less of [them] than would be sufficient to replace what they use in production. Thus productive activity is reduced in a greater proportion than sales, and since general demand is generated by the consumers' income, and the consumers' income is generated by productive activity, there will be a further reduction of general demand and therefore presumably of consumption. This will react in the same way and a vicious circle will be set up; declining demand causes declining activity, and declining activity causes declining demand.<sup>6</sup>

It should be evident from the foregoing that the critical factor in precipitating the downturn is the contradiction of bank credit. It behooves us to examine the reasons for this action of the banks.

<sup>6</sup> Actually, the banks seldom call, but rather lend less (as new credit) than they receive (in the repayment of old loans).

<sup>7</sup> R. G. Hawtrey, *Capital and Employment* (London, Longmans, Roberts and Green, 1937), pp. 70-71. The reader should note the strong resemblance of this spiral to that described as part of the acceleration principle.

*The Significance of Bank Credit*

As the banks expand the volume of loans, and as productive activity is accelerated, we have seen that the incomes of the owners of the various factors of production increase. While the bulk of the increased incomes will be respent on consumption and investment, some will be used to build up the cash balances of households and business firms. This is particularly true of the working classes. The transactions of this group are primarily of the small retail variety in which cash is predominantly used. Therefore, as employment and wages rise, the working classes begin to absorb cash, thereby depleting the cash reserves of the banks.<sup>6</sup>

But this is a slow process, for, as is well known, wages tend to lag behind the expansion of bank credit and the rise of prices and profits. Even after wages catch up to their "normal" relationship to prices and profits, however, the cash balances of labor continue to increase. The drain of cash from the banking system finally results in a shortage of bank reserves which is so severe that the banks do not simply refuse to lend any more, but actually are compelled to contract. Thus the money flow and the level of monetary demand are reduced, and the downward spiral begins.

Throughout his writings Mr. Hawtrey has, with some reluctance, omitted the possibility of a "credit deadlock." By a "credit deadlock" is meant a situation wherein no amount of interest rate reduction is sufficient to stimulate borrowing by businessmen. According to Hawtrey such a situation develops when *prices* fall so rapidly that the banks are helpless in doing anything to induce borrowing. In our own terminology we may say that the marginal efficiency of capital is so low (perhaps even negative) that interest rate reduction is futile as a stimulus to investment. Although he has conceded such a possibility, and despite the negative results of low interest rates during the depression of the thirties, Hawtrey continues to feel that such experiences are rare and unworthy of more than passing comment.

<sup>6</sup> This action is analogous to the better known "external drain" of cash from the banking system as the volume of transactions and the price level rise during the course of an upswing in business activity.

Were it not for blind faith in *reserve ratios* as the guide to credit policy, such deflation would be unnecessary. But central banks, mindful of their obligations to maintain exchange stability (and wary of inflationary threats), refuse to build up the reserves of commercial banks indefinitely. Furthermore, reserve ratios act too slowly to be of much value as a warning of dangerous credit expansion. The consequence is that the expansion usually is allowed to proceed too far. "The trade depression was the accompaniment of the prolonged credit contraction which was thereafter necessary to restore the cash position of the banks." "

In summary, the basis of the trade cycle is the *inherent instability* of credit. Activity causes credit expansion, credit expansion increases demand, demand evokes greater activity. Depression damps down borrowing, diminished borrowing brings with it curtailed demand, curtailed demand means more depression.

#### CRITICAL ANALYSIS

The criticisms to be directed against Hawtrey's theory must be primarily of an empirical nature. The theory is logically correct, but some of his assumptions conflict with certain facts of reality, and the significance of the theory is reduced in consequence.

#### *The Exaggerated Significance of the Wholesaler*

In the first place, Hawtrey emphasized the role of the wholesaler because of his great importance in England before 1914. Since then, however, his importance has greatly diminished. Moreover, it is possible that traders may finance largely with their own capital rather than by borrowing. This seems to have been largely the case in the United States. Thus it appears that Hawtrey has greatly exaggerated the importance of the wholesaler.

#### *Exaggerated Sensitivity of the Wholesaler to Changes in the Rate of Interest*

On a number of counts, also, Hawtrey has probably overestimated the degree of sensitivity with which the wholesaler responds.

<sup>9</sup> *Trade and Credit*, p. 102.

to changes in the bank discount rate. In cases where the traders finance inventories with their own capital and reinvested earnings, they are not likely to respond as quickly to changes in the discount rate as would be the case when they are working mainly with borrowed capital. Moreover, if the trader believes that the cut (or rise) in the discount rate will be temporary, it is unlikely that he will lower (or raise) his selling price and increase (or decrease) his sales. For one thing, he may have no clear understanding of the shape of his marginal cost curve, and thus be unable to realize that an expansion of his sales will increase the rise in his profits (when the interest rate is lowered), or that a contraction of sales will lessen the fall in his profits (when the interest rate is raised). Furthermore, if his sales remain unchanged, he is highly unlikely to vary the level of his inventories, because of the rather common practice of maintaining fixed ratios between inventories and sales.

Changes in interest rates, furthermore, usually occur when prices are changing. Thus when prices are rising, the wholesaler is not likely to be deterred in his borrowing, for he can simply raise his price in step with the rise in his costs. Conversely, in times of deflation, reductions in the interest rate (and thus costs) are likely to be offset by declining prices (and thus revenues).

### ***The Business Cycle More than a Monetary Phenomenon***

Another basis for criticism is Hawtrey's contention that the business cycle is purely a monetary phenomenon. One might more legitimately emphasize the production-sales mechanism, into which credit flows, in discussing the cycle. The variation of the ratio of loans to reserves implies that certain processes of production are demanding the use of credit, now in greater quantities, now in smaller quantities. Moreover, it is the rise in the level of transactions (business and personal) which is essentially responsible for the cash drain. Finally, there are many other factors which may halt an upward movement, long before the limits of the reserve ratios are reached. The natures of these factors will become evident as we discuss other theories of the trade cycle.

*Overemphasis on the "Inherent Instability of Credit" in the Modern Context*

Finally, much of Hawtrey's analysis is predicated on his ideas of the inherent instability of credit. This idea, however, is a product of the old commercial banking school theories. Proponents of these theories traditionally argued that commercial banks should make their loans only on the basis of short-term commercial paper, expanding credit when the volume of commercial paper goes up, and contracting credit when the volume of commercial paper goes down. Strict adherence to this doctrine, however, means superimposing accentuating inflationary and deflationary forces on the upswings and downswings of the economy. The commercial banking school doctrines completely ignored changes in the velocity of circulation of money **during** the course of the upswings and downswings. To the extent **that** an increase in the velocity of money satisfies the "needs of **trade**" for more money for transactions purposes, to that extent the **additional** expansion of bank credit creates an inflationary force. Conversely, in the course of a recession, the velocity of circulation falls in response to a diminution in the transactions demand for cash, and a contraction of bank credit serves merely to add to the deflationary pressures.

In recent years, however, the portfolios of commercial banks have undergone important changes. Over a period of years, the proportionate importance of short-term commercial paper as an asset has declined, with a corresponding *increase* taking place in the proportion of government securities. Today banks, on the average, hold over 60 per cent of their assets in the form of government securities. This development has great significance for the "inherent instability" characteristics attributed to the banking system. By and large, it may be said that as long as government securities loom large in bank portfolios, the banking system will be inherently much more stable than has been the case in the past. The reason for this is that governments, unlike businessmen, do not operate on the basis of the profit motive. Hence, there is every reason to believe that no modern government will begin to pay off bank-held debt as soon as a recession sets in. As a matter of fact, exactly the opposite is

more likely to take place, as governments attempt to stem the tide of recession and embark upon deficit-financed spending programs.

Despite the foregoing criticisms, Hawtrey has made a real contribution to business-cycle theory. His emphasis on the often perverse elasticity of the credit mechanism points up the all-important role of the credit system in the cumulative processes of expansion and contraction which characterize modern free-enterprise economies. It is undoubtedly true that some limitation on the banking system's power to create credit would assist in reducing the extreme range of the fluctuations in business activity. It would be a serious exaggeration, however, to lay all the blame on the banking system, for, as pointed out above, cognizance should also be taken of the role played by productive processes. The theories to which we shall now pass have the virtue of emphasizing the relationships between the processes of production and the credit mechanism.

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## CHAPTER 6

### *THE OVERINVESTMENT THEORIES*

#### **THE MONETARY OVERINVESTMENT THEORY**

It is a universally recognized fact that during the course of the business cycle the capital goods industries tend to fluctuate much more violently than do those industries which produce for current consumption. It is statistically verifiable that the industries producing investment goods expand and contract to greater extents than consumer goods industries during the revival and recession periods, respectively. There is a large group of business-cycle theorists who assert that these differences in the relative rates of expansion and contraction of the two general categories of industry cause the cycle, rather than appear as symptoms of cyclical maladjustments.

One school of thought, the so-called Austrian School,<sup>1</sup> insists that the relative disparities in the rates of growth in the aforementioned categories of industry may be traced to the banking system. That is, while the business cycle is not a purely monetary phenomenon, the distortions in the productive system, which really are at the root of business fluctuations, would not occur without an elastic system of bank credit. It is the purpose of this chapter to present and to analyze critically the essence of their propositions in an ef-

<sup>1</sup>The "Austrian School" is generally taken to consist of the following writers: F. A. Hayek, L. Mises, F. Machlup, W. Röpke, and the English economist, Lionel Robbins. It is worthy of note that in recent years, Professor Hayek has reversed the position he took as probably the outstanding exponent of the monetary-overinvestment theory. He now takes the position that booms come to an end because of too *little* investment. See the Appendix to this chapter.

fort to ascertain their valid contributions to business-cycle theory.<sup>2</sup>

There are two central elements in the thesis of the Austrian school, which, together, provide the basic conditions for the monetary overinvestment explanation of the trade cycle: (1) the elasticity of bank credit and its effect on the rate of interest; and (2) the famous concept of forced saving.

### THE REVIVAL AND UPSWING

As is well known, the banking system as a whole is capable of expanding credit to some multiple of any given amount of new cash received. This expansion may come as a result of one or two possibilities.

#### *The Marginal Efficiency of Capital*

New inventions or discoveries may appear; new markets may be developed; new sources of raw materials may be found. All these and other possibilities have the effect of raising the marginal efficiency of capital. If the interest rate remains unchanged, a larger volume of profitable investment becomes feasible. But such a rise in the marginal efficiency of capital alone will not suffice to explain the *excessive* increase of investing activity which engenders a subsequent crisis. This *overexpansion* of investment activity is possible only when this activity is financed through increases in bank credit and not through voluntary saving out of current income. Businessmen generally need not depend on the voluntary savings of consumers for their supply of investment funds. Instead, under the inducement of a rise in the marginal efficiency of capital, they may, and usually do, borrow from the commercial banking system, which simply creates the money it lends.

<sup>2</sup> The Austrian analysis, following Wicksell, proceeds in terms of disparities between the actual market rate and the equilibrium rate of interest, i.e., the rate which equates the supply of and demand for savings. Thus a period of boom is depicted as beginning with a fall in the market rate below the equilibrium rate as a result of the expansion of bank credit. (Alternatively, it might be said that the equilibrium rate rises above the market as businessmen begin to take a more optimistic view of things.) However, it seems advisable, in view of the objectives of this book, to recast the analysis in the form developed in Chapter 2. Nothing is lost in this procedure, and it does have the advantage of simplicity.

### *The Rate of Interest*

However, a rise in the marginal efficiency of capital is not the only inducement to increased investment. From our earlier analyses we know that, *given* the marginal efficiency of capital, a fall in the rate of interest may stimulate investment activity. The Austrians firmly believe that the marginal efficiency of capital is very elastic with respect to changes in the rate of interest. Hence a fall in the latter is taken to be just as effective as a shift in the position of the marginal efficiency of capital schedule itself. Channels of investment whose rates of return heretofore were below the rate of interest become attractively profitable with the new lower rates, and businessmen increase their orders to the capital goods industries for additional investment goods.

But why does the interest rate fall? The student knows that the ratio of bank reserves to outstanding loans is seldom constant over time. Excessive cash reserves mean less profit to banks, for these reserves are strictly nonearning assets. Furthermore, competition often causes the individual bank to lend in order to avoid any loss of customers to a competing bank. For these and similar reasons banks lower the market rate of interest, with the result, as we have seen, that businessmen begin to borrow and to expand the volume of their investment. This is particularly true in the case of the "heavy" industries. The demand for long-lived capital goods is especially sensitive to changes in the rate of interest.<sup>3</sup>

### *Forced Savings*

Now there is nothing wrong with investment, say the Austrians, so long as the funds invested come from *voluntary* current savings, *i.e.*, from a voluntary reduction of society's propensity to consume. At any given time, total expenditures are divided between capital goods and consumer goods. If in one period of time more is saved out of current income than in the previous period (that is to say, the

<sup>3</sup> This follows from the nature of the discount formula. Changes in the rate of interest affect distant incomes much more than those near the present. Hence heavy industries, investing in equipment which usually yields income far into the future, respond more quickly to changes in the rate of interest. (Cf. Chapter 4, *infra*, p. 165, footnote 25.)

savings function rises), and these savings are invested, there is a relative decline in the demand for consumer goods and a proportionate increase in the demand for capital goods. By virtue of this act of saving and investment, the structure of the productive system is permanently modified in favor of more capitalistic processes. There will be relatively more money spent on the production of capital goods so that, in the end, production will use a larger quantity of capital goods per unit of output than heretofore.<sup>4</sup>

But the very expansion of bank credit makes a decline in the nation's propensity to consume come about in an involuntary, a *forced*, way.<sup>5</sup> This happens in the following manner: *Assuming full employment*,<sup>6</sup> the expansion of bank credit through loans to the various groups of investors places additional purchasing power in their hands. This enables them to bid up the sale prices of capital goods relative to those of consumer goods. The producers of capital goods are in turn enabled to bid up the prices of the factors of production and thus draw them away from the consumer goods industries. As long as potential investors can borrow from the banks and cause capital goods prices to rise relative to those of consumer goods, the producers of capital goods can continue to bid

<sup>4</sup> In the Austrian terminology, this is described as a *lengthening* of the process of production. More roundabout (capital utilizing) methods of production will appear.

<sup>5</sup> It should be noted by the reader that this decline in the propensity to consume occurs in *real* terms. Heretofore our analysis of the consumption function has been carried out in money terms. As a matter of fact, the propensity to consume in money terms probably *rises*, as prices tend to rise faster than the increase in people's money incomes, thus forcing people to spend greater amounts of their incomes on consumption in an effort to maintain their standards of living. However, because prices do rise *faster* than money incomes, the decline in the purchasing power of money means that the amount of goods and services which people can acquire actually diminishes. This is the basis of our assertion that the propensity to consume (in real terms) is declining. Furthermore, this is the essence of the concept of "forced savings" discussed in the succeeding pages.

<sup>6</sup> The full significance of the assumption of full employment should be appreciated by the student. When an economy is operating at a level of full employment, it is possible to expand output along one channel of production only by curtailing output in another channel of production, thereby releasing factors of production from the latter to the former. Thus, if it is desired that capital goods production be expanded, this can be achieved only by curtailing consumer goods production. This is the process which is described by the Austrians. A further and fuller treatment of this concept is given in Chapter 8, pp. 274-275.

away the productive agents from the consumer goods industries. Such a movement obviously curtails consumer goods production in favor of increased capital goods output. In effect, the community's propensity to consume (in real terms) is *forced* downward.<sup>7</sup> Consumers are compelled to save simply because there is a shortage of consumer goods.<sup>8</sup>

The effects of a forced decline in the nation's consumption function are very different from those associated with a *voluntary* downward shift. Such a decline

is not made by those who will reap the benefit from the new investments. It is made by consumers in general who, because of the increased competition from the entrepreneurs who have received the additional money, are forced to forego part of what they used to consume. It comes about not because they want to consume less, but because they get less goods for their money income. There can be no doubt that, if their money receipts should rise again, they would immediately attempt to expand consumption to the usual proportion.<sup>9</sup>

As a matter of fact, when producers spend their newly borrowed bank money on investment goods, they generate new income to the factors of production (or to their owners) now employed in the capital goods industries. But it was this very group of people, in part, whose consumption was involuntarily curtailed. It is to be expected that as soon as the higher level of money income is realized, they will make a strong effort to restore their former levels

<sup>7</sup> This decline in the real propensity to consume may be said to occur for two reasons: (1) the rise in factor prices resulting from the increased demand from capital goods industries causes the prices of consumer goods to rise at a faster rate than the incomes of consumers; and (2) rigidity of certain costs and incomes which are contractual in nature causes income to be diverted from groups with a comparatively high propensity to consume to entrepreneurs, who tend to have a low propensity to consume.

<sup>8</sup> This situation is in some respects analogous to wartime economies. During war the government is the borrower. Either because prices rise faster than incomes, or because a system of rationing is imposed with price ceilings, the propensity to consume is lowered, so that agents of production may be diverted from consumption to war industries.

<sup>9</sup> F. A. Hayek, *Prices and Production* (London, George Routledge & Sons, 1935), p. 57. The reader should note, in this connection, that the consumer who is forced to save (in the real sense) does not improve his liquidity position in the way a voluntary saver does. On the contrary, he must still spend *all* his money income (to meet the higher prices) even though his level of *real* consumption falls.

of consumption. In order to do this, though, they must bid up the prices of *consumer* goods sufficiently to enable the producers of these goods to take the necessary factors of production away from the *capital* goods industries. As long as the banks continue to extend new credits to the borrowing investors, however, these industries will be able to meet or to better the competitive bidding for productive agents which emanates from the consumer goods industries.

### THE CRISIS AND DOWNSWING

Eventually, bank credit expansion must cease. One reason for this is, as was shown in the last chapter, the reaching of the reserve limits imposed by the gold standard or by customary and legal practices. Even if these limitations did not exist, however, credit expansion finally must come to an end, lest it generate a cumulative upward spiral of prices leading ultimately to the complete collapse of the monetary system.

### *The Restoration of Consumption Demand*

Once the borrowing power of investors has been sharply limited, capital goods producers can no longer meet competition from the consumer goods industries for the agents of production. In the meantime, the efforts of consumers to restore their consumption to its former level will cause consumer goods prices to rise relative to capital goods prices and will make the expanded production of consumption goods increasingly profitable. Producers in these industries then proceed to bid up factor prices—wages, etc. Interest rates rise, both from the continued efforts of investing enterprises to borrow more money and from the banks' efforts to limit (or prevent) further borrowing (that is, a further depletion of their reserves). But a rise in interest rates tends to lower the discounted values of future revenue streams from capital goods. Thus the costs of producing capital goods are raised above the expected levels of investors at the very time the (anticipated) discounted values of the future revenue streams fall. The resulting combination of a fall in the marginal efficiency of capital and rise in interest rates on borrowed funds results in a greatly slackened demand for invest-

ment goods.<sup>10</sup> This is especially true of heavy industries, which, as we have already seen, are considerably affected by changes in the rate of interest.

The essence of the foregoing is called by the Austrians a *capital (funds) shortage*. The meaning of the term capital shortage should be clear from the above description of the crisis. Entrepreneurs who desire to continue their investment projects to completion are effectively estopped by the shortage of capital (or loanable) funds. This shortage, in turn, stems from the refusal of consumers to *save* and the banks to *lend*. Hence the investing businessmen are deprived of monetary resources with which to maintain their demand for investment.

### *The Breakdown in Capital Formation*

Once the error in anticipations is realized, a sharp contraction of production takes place in the capital goods industries, as the demand for investment goods falls off under the pressure of rising costs of investment goods and a falling marginal efficiency of capital. This sudden contraction releases factors of production at much too rapid a rate for them to be absorbed by the more slowly expanding consumer goods industries. Large-scale unemployment results, the income stream is broken, and a downswing in general business activity sets in.

This recession is likely to develop into a real depression under

<sup>10</sup> The reader may properly wonder why a rise in the propensity to consume doesn't stimulate investment via an induced increase in the marginal efficiency of capital. That such does *not* result involves two assumptions: (1) reasonably full employment of most of the nation's resources; and (2) the fact that demand for consumer goods rises *relatively* to the demand for capital goods. The first assumption is likely to be correct at the top of a boom. The second assumption is implicit in the assertion that banks sharply restrict credit grants. Thus, even though capital goods producers wish to continue borrowing and expanding, their efforts result only in higher interest rates. Because these industries are typically heavy industries, the rise in the interest rate has a greater damping influence (via the discount process) on their investment calculations than is the case in the lighter (less capital using) consumer goods industries. For further discussion of these assumptions see A. H. Hansen and H. Tout, "Investment and Saving in Business Cycle and Theory," *Econometrica*, I (April, 1933), pp. 119-147. Implicit in the last point also is the assumption that the increase in *derived* demand for capital goods is not sufficient to offset the rise in the rate of interest.

the pressure of a rush for liquidity. Falling prices, pessimistic expectations about future incomes, employment, etc., all give rise to hoarding. Businessmen, worried about the future level of business activity, increase their cash balances to avoid financial embarrassment. The price decline and general state of pessimism exert damping influences on the marginal efficiency of capital and through it, on investment.

*Ceteris paribus*, depressions should be short. "After a certain interval of liquidation and cost cutting, business prospects will once more brighten and revival will gradually take place."<sup>11</sup> But other things are not equal:

1. Strong tendencies toward wage and price rigidities pervade modern capitalistic economies. These rigidities arise from the growing ability of trade unions to resist wage cuts and the administered prices which characterize monopolies and cartels. Furthermore such state controls as tariffs encourage cartels to continue their price-maintenance practices, while unemployment insurance aids unions in resisting wage cuts.
2. A fall in prices in certain sectors of the economy (such as agriculture) as a result of technological improvements may have a depressing influence, especially if they coincide with a more general price deflation.
3. The "easy money" policies of modern governments act to prevent the liquidation of marginal concerns, and so tend to prolong both their agony and the depression.
4. The use of tariffs to keep out imports and to stimulate domestic production has just the opposite effect: protective tariffs usually lead to retaliatory actions by affected countries, and exports fall off, as well.
5. Professor Irving Fisher has emphasized the importance of the widespread resort to long-term debt to finance investment during the upswing as a factor contributing heavily to the later contraction.<sup>12</sup> The burden of fixed interest and amortization charges obviously grows in the presence of a declining price level. This increasing burden produces a sequence of wholesale liquidation and distress selling of securities, "real" assets, as well as commodities in an effort both to relieve some of the debt burden by reducing at least part of the debt

<sup>11</sup> L. Robbins, *The Great Depression* (London, The Macmillan Company, 1934), p. 55.

<sup>12</sup> See his article "The Debt-Deflation Theory of Great Depressions," *Econometrica*, I (October, 1933), pp. 337-357.



and, in the case of distress selling, to lay hands on badly needed cash. The desire for liquidity dominates. But the combination of such factors as distress selling, the sale of long-term securities, the hurried repayment of bank debt under the increasing pressure of fixed interest charges, all results in a more intense fall in the general price level, with the result that the burden of fixed charges is greater than ever. The liquidation of debt and distress selling can never keep pace with the decline in prices, the intensity of which they themselves are largely responsible. As the burden of fixed debt grows heavier, the pressure toward increased liquidity, debt liquidation, and distress selling increases, and the resulting contraction of bank credit plus the building up of cash safety margins leads to a still further decline in monetary demand and prices. Thus the downswing is accentuated by the deflationary forces created by the widespread existence of fixed debt.

### CRITICAL EVALUATION

Criticism of the monetary overinvestment school should take place within a dual scheme. One should evaluate the theory within the framework of its own assumptions, and also examine the assumptions themselves. We shall proceed with the latter approach first.

Underlying the entire analysis of the Austrian School is the fundamental assumption of *full employment*. All the writers start their discussion from the equilibrium position of full employment. Although they do not explicitly deal with the problem, there is no reason to infer that they mean the condition of full employment to prevail *throughout* all phases of the cycle. If this be so, their analysis cannot claim to explain the entire cycle, for its assumptions make it applicable only during that part of the cycle which is characterized by relatively full employment.

But it is possible, and undoubtedly much more realistic, to start from a condition of underemployment of resources. In such a case, the effects of expanding bank credit may be very different from those postulated by the Austrian School.

#### *Expansion from Full Employment*

The concept of "forced saving," which is the heart of the Austrian analysis, has proceeded on the premise that consumption *must* be curtailed if businessmen are to expand investment. This condition

is necessary in order that factors of production already fully employed may be diverted to the capital goods industries. Such a diversion can be accomplished only by bidding up factor prices so as to lure the factors *away from* the consumer goods industries. Prices are thereby forced up, the propensity to consume is forced down, and involuntary saving results.

### *Expansion from Less than Full Employment*

Suppose, however, that widespread unemployment prevails at the time banks extend credit to businessmen. In such a case, the expansion of capital goods production is perfectly feasible without curtailing consumer goods production. All that is necessary is the employment by the investment goods industries of the unutilized resources. In fact, under the postulated conditions, it is possible to expand simultaneously *both* capital and consumer goods production. With widespread unemployment prevailing at the outset, factor prices need not be bid up in order to attract resources into the capital goods industries, for the unemployed would undoubtedly be willing to work at going rates. If factor prices do not rise, consumer goods prices are unlikely to do so, and forced saving cannot take place. Eventually conditions of full employment may prevail, at which stage the Austrian analysis would become applicable.

For similar reasons, the thesis that forced saving results also from a redistribution of purchasing power from fixed income groups (with fairly high propensities to consume) to entrepreneurs (with low propensities to consume) does not hold in periods of partial employment. Giving the latter group additional purchasing power (via expanded bank credit) need not occur at the expense of the remainder of the community; the entrepreneurial group is enabled by the prevalence of unemployed resources to bring about a rise in the volume of production.

The assumption of full employment sharply limits the usefulness of the monetary overinvestment analysis, but this is not its only source of weakness. Its other weaknesses, however, must be examined *within* the logical framework of the assumptions, themselves.

### *The True Nature of Forced Saving*

As Professor Hansen observes,<sup>18</sup> forced saving in itself is not a malignant factor. The danger is that an *uneven rate* of forced saving tends to result in fluctuations in capital goods production. A steady rate of capital formation, stimulated by an *even* rate of forced saving probably would not lead to significant fluctuations in production.

On the other hand, a varying rate of *voluntary* saving would cause harmful fluctuations in the capital goods industries. For example, even if a certain amount of capital goods production were brought to completion (because of sufficient forced or voluntary saving), a violent fluctuation in capital formation might occur as a result of a sharp decline in investment during the period of change from *net* investment to replacement demand. "It is not forced saving as such, but its irregularity," deriving from fluctuations in the volume of bank credit, which is a basic factor in the ups and downs of business activity.

### *Some Qualifications Concerning Bank Credit*

Care should also be taken in discussing credit creation by the banking system, for not all such creation is necessarily inflationary. There is undoubtedly a secular rise in the credit-creating capacity of the banking system which is in accord with the general technical development of the economy. This rise is indeed necessary for the real growth of the economy. In a progressive economy, the dynamic factors of growth—population increase, technological progress, capital accumulation, etc.—lead to a continuing rise in the level of output. Under these circumstances, an expansion of credit will not necessarily result in price rises. It is necessary to make explicit assumptions about the rates of growth of the different dynamic factors. Under certain assumptions, a given rate of growth of credit-creating capacity relative to that of output may be just sufficient to allow the economy to move along on a fairly even keel. Under other assumptions, the same rate of credit ex-

<sup>18</sup> A. H. Hansen, *Full Recovery of Stagnation?* (New York, W. W. Norton & Company, 1938), pp. 69-72.

pansion may exceed the rate of output and hence exert an upward pressure on prices. Too slow a rate of capital accumulation or population growth, for example, might bring about such a situation.

There is also no *a priori* reason why the expansion of credit cannot continue long enough to allow many of the new processes to be brought to completion. If this turns out to be the case, the increased consumption (which is the aftermath of forced saving) need not occasion real concern, let alone engender a crisis. A crisis could be precipitated in these circumstances only under the assumption that the increased consumption (rise in propensity to consume) leads to attempts to begin new investment projects. But, as the Austrians note, with an assumed inelastic credit supply at the top of a cycle, the increased demand for investment funds would result primarily in a higher level of interest rates. Under the assumption posited here, *i.e.*, that some processes are completed, higher interest rates may act as a deterrent to *new* investment, but should not cause a collapse in completed projects. Thus statements that upward shifts in the consumption function may lead to crises make sense only when it is assumed that the new processes are not brought to completion.<sup>14</sup>

### *Horizontal vs. Vertical Maladjustments*

The type of maladjustment described by the monetary overinvestment theorists may properly be called a *vertical* type of maladjustment. By a vertical maladjustment is meant an overexpansion of industry in one stage of production relative to the state of expansion in another stage, higher or lower in the sense of being farther removed or closer to the final consumer goods stage. Thus it is the thesis of the overinvestment school that, given the *volun-*

<sup>14</sup> As Professor Haberler observes (*Prosperity and Depression*, p. 47) care should be taken to avoid misconstruing the meaning of the term *completed* (or interrupted) processes. Failure to complete a process does not mean simply that some construction project, such as new plants or railroad expansion, is interrupted in the middle. "A much more important case is where a higher stage of production has been so much developed that it can work with full capacity only if the lower stages are adding to their equipment." Thus if an industry producing capital equipment expands to meet the needs of an expanding consumer goods industry, and the latter *stops* growing (without necessarily contracting), the former may suffer a sharp contraction simply because the latter no longer needs additional equipment.

*tary* decisions of consumers between spending and saving, the capital goods industries are overexpanded relative to the consumer goods industries. That is to say, investment is taking place faster than the rate to which consumers are willing to accede, as indicated by their willingness to forego, voluntarily, consumption, to save.

In a sort of contradistinction to vertical types of maladjustment may be posed the *horizontal* type of maladjustment. Horizontal maladjustments refer to overexpansion of particular branches of industry relative to others in the *same* stage of production. Thus we may have an overproduction of automobiles or radios, or men's clothing, or plate steel, or raw copper, etc. Horizontal maladjustments thus imply misinterpretation on the part of producers of the distribution of consumer expenditures among the various consumer goods or a misinterpretation of the demand of other producers for various inputs. Often such overproduction can be ascribed to ignorance on the part of each of the producers in the overexpanded industry of the extent of expansion by each of his competitors.

Now, as Professor Haberler points out,<sup>15</sup> very often what the Austrians call a vertical maladjustment may in reality be a horizontal maladjustment, of sufficient magnitude to evoke the same consequences as a vertical maladjustment of the type envisaged by the Austrians. For example, overinvestment in railroads or automobiles may arise simply because demand *shifts* to other outlets of expenditure deemed more important. If the steel industry had undergone a wholesale expansion to meet the anticipated demand for sale emanating from these two industries, the decline in the demand for automobiles and rail shipment could well result in a wholesale contraction in the steel industry. This would be the case if the shifting demand moved into channels which use far less steel than the automobile and railroad industries.

At the same time, however, this maladjustment was brought about not by the reactions of consumers to being forced to save (forego consumption) against their will, but merely resulted from a shift of demand from one product to another when the former had been more or less satisfied relative to other wants. Of course, in both types of maladjustment it is necessary to posit reasons why the

<sup>15</sup> *Ibid.*, pp. 112-113.

breakdown in one sector of the economy spreads, and sets in motion a cumulative downward movement of contraction. Presumably, the analysis of such a contraction would be much the same in both cases: the ramifications of the contractions in the particular industries affected must be widespread, and the economy must have reached a certain stage in the upswing where it is incapable of withstanding a shock of the type envisioned in this discussion. In practice, it undoubtedly is extremely difficult to discern whether a crisis has been engendered by a vertical or horizontal maladjustment, for if the latter is significant enough it is clear that it is virtually indistinguishable from the vertical type of maladjustment.

### *Summary*

The foregoing criticism of the Austrian school should not be taken as a denial of all validity to their theories. Rather they should be construed as qualifications necessary to give rigor to their analyses. These theories correctly emphasize the maladjustments and distortions in the productive process which occur during the course of many business cycle upswings. Furthermore, they emphasize the relation of the elastic credit system to the productive processes and to the maladjustments of the latter. While forced saving may not always characterize every upswing, there are no doubt periods when it does occur and (if subject to considerable variation in rate) probably exerts important influences on production processes and business activity.

Moreover, much validity is imputable to their theories on the grounds that, assuming a relatively inelastic credit supply at the peak of a cycle, there is a lack of mobility of the factors of production. Hence a violent *shift* in production (from one commodity to another) may cause *fluctuations* in production. When factor immobility is taken into account, shifts in demand (especially among industries employing large numbers of workers and providing market outlets for other industries) may be seen as a source of cyclical fluctuations. That is to say, a period of depression might be initiated during the period of readjustment in the productive forces, while expanding industries are gradually coming to employ the resources released (suddenly, perhaps) by contracting industries.

### THE NONMONETARY OVERINVESTMENT THEORY OF THE BUSINESS CYCLE

The nonmonetary theory of the trade cycle has been most clearly developed in the writings of Spiethoff and Cassel.<sup>16</sup> The theories of these writers differ from those of the Austrian School mainly in that they are phrased in nonmonetary terms, *i.e.*, their primary stress is on the *processes* of production. Money and the credit systems are relegated to subordinate and very passive roles. Nevertheless, it is clear that the elasticity of money and credit is implicit in their ideas and is really an integral part of their analyses. Their comments would make little sense if this were not so. For this reason, our analysis of their theories will be rather brief, inasmuch as we have already examined in some detail the explanations of the Austrian School, to whose thoughts those of Spiethoff and Cassel bear a startling resemblance if the latter are properly interpreted.

Unlike the Austrians, the theories of Spiethoff and Cassel begin with a period of widespread depression, characterized by general unemployment of resources, low interest rates, low wages, large accumulations of idle cash balances, etc. Revival commences as a result of such stimuli as new inventions, the discovery of new markets, new, cost reducing methods of production—anything, in other words, which exerts a stimulating influence on the marginal efficiency of capital.<sup>17</sup> Cassel also strongly emphasizes the im-

<sup>16</sup> Cf. A. Spiethoff, "Krisen," *Handwörterbuch des Stadtsuissenschaften*, 4th ed., VI (June, 1925), and "Überproduktion," *Jahrbuch für Gesetzgebung* (1902). Unfortunately, no English translation of Spiethoff's works exists but an excellent summary of his ideas is to be found in A. Schweitzer, "Spiethoff's Theory of the Business Cycle," *University of Wyoming Publications*, VIII, No. 1 (April, 1940), pp. 1-30. Cassel's ideas, while closely similar to Spiethoff's, do emphasize slightly different factors, mainly the role of the interest rate. See G. Cassel, *Theory of Social Economy* (New York, Harcourt, Brace and Company, Inc., 1924), Book 4.

<sup>17</sup> Like Professor Schumpeter, who is discussed in the following chapter, both Cassel and Spiethoff firmly believe that those fluctuations in national income which we call the major business cycle were the inevitable product of the growth of an expanding economy. Economic progress, they feel, comes in great discontinuous spurts, and the discovery of great new production techniques, the opening of new territories and markets, the development of new products, etc.; all part of economic progress, gives rise to the giant booms of

portance of reductions in interest rates consequent upon the accumulation, during the course of depressions, of large, uninvested balances of loanable funds. As we have seen, the combined effects of a *fall* in the level of interest rates and a sharp *rise* in the marginal efficiency of capital are bound to evoke large increases in the demand for new investment.

### *The Upswing and Crisis*

Both writers implicitly and explicitly admit that the upswing, as they envision it, must be accompanied by dishoarding of idle cash balances and, later on, by expansion of bank credit. During the earlier part of the upswing, when unemployment is prevalent throughout the economy, this is a perfectly correct situation. For in such times, the unemployed resources will be mobilized to provide increased production. But once full employment is reached, continued dishoarding and, more particularly, continued credit creation will result in inflation. Because wages lag behind rising prices, profits also shoot up.

Profits, however, are the sources of increasing savings, which, in turn, are the basis of the demand for investment goods.<sup>18</sup> As long as prices (and credit creation) increase faster than wages, profits (and therefore, savings and inflationary sources of loanable funds) will continue to provide the funds for the purchase of investment goods. As in the case of the monetary overinvestment theories, the discussion of the wage lag implies a forced decline in the community's real propensity to consume, so that at various levels of real national income, an increased volume of savings is forthcoming. This is a crucial point in the nonmonetary approach also.

During the course of the upswing, however, wages begin to

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the major cycle. True the ensuing boom engenders certain misallocations in the distribution of resources, which eventually lead to the breakdown and depression. But the boom is dependent on the appearance of some great new form of advance in one of the factors of economic growth. Without them, business cycles would gradually disappear, and economies would settle down to a form of the well-known Stationary State.

<sup>18</sup> Although these writers do not explicitly say so, we may interpolate to the extent of saying that investment funds deriving from credit creation also



catch up with prices; savings, therefore, decrease. As we did earlier, we may also add that the banking system begins to reach the limit of its reserve requirements, with the result that credit creation is greatly diminished. Hence, the two main sources of the demand for capital goods dry up. The demand for investment goods falls, and a condition of overinvestment, *i.e.*, overproduction of capital goods, prevails. This situation is further aggravated by the continued technical completion of investment goods production begun before the decline sets in.

### *The Precise Meaning of Overinvestment*

It is necessary for us to examine the nature of this overinvestment, particularly as viewed by Spiethoff. To utilize the overproduced capital goods, it is necessary that additional capital goods of an intermediate character be produced. There is a complementary nature about the various categories of goods produced, from heavy plant and equipment down through intermediate (circulating) capital goods to the final stages of consumer goods production. In order to utilize goods of a higher order, say, heavy equipment, sufficient quantities of those of a lower order, say, raw materials, must be produced.

In the theory we are examining, it is asserted that during the course of the upswing, a shortage of intermediate capital goods develops. This shortage stems from the dearth of investment funds, the basis of the demand for these goods. With wages catching up to prices, consumption expands, as the propensity to consume rises toward its former level. Increased consumption at various levels of income means that the level of savings is down. Since credit creation has also ceased, the two major sources of investment funds are gone.<sup>19</sup> The resulting deficiency in the demand for investment goods makes the production of intermediate capital goods unprofitable. Hence these goods are not produced in sufficient quantity,

<sup>19</sup> Professor Cassel also emphasizes the extreme importance of the sharp rise in interest rates which accompanies the drying up of the supply of investment funds. Such a rise causes a sharp reduction in the capital values of anticipated investments (via the discounting process) and thus accentuates the decline in the demand for the complementary investment goods. Cf. Cassel, *op. cit.*, Chap. XVII.

and the capital goods of higher orders already produced cannot be utilized.

It is in the sense described in the preceding paragraph that overinvestment is conceived in the nonmonetary theory. It is a dearth of complementary goods that is the essence of this condition. Investment goods production, in *all* the necessary stages, is not carried to the point where their end goal may be achieved, *i.e.*, the production of consumer goods. Why? Because the production processes were begun, in large part, by *forcing* down the community's propensity to consume. As soon as the money income of consumers, particularly labor, increases, they will attempt to regain their former levels of consumption. The deficiency in the quantity of savings is, surprising as this may seem, the aftereffect of a scarcity in the quantity of consumer goods (production of which was not increased in proportion with the expanding volume of capital goods).<sup>20</sup> Presumably, if the rate of saving were maintained, complementary goods would be produced, and the production processes could then proceed in an orderly fashion to their final objective—the production of consumer goods.

It may be asked why enterprises continue to make the same mistakes, cycle after cycle. The answer, according to these writers, lies in the extreme roundaboutness, and hence time-consuming nature, of modern methods of production. Because of their time-consuming character, modern production processes may be started in the midst of a vigorous boom (when investment demand is high) and brought to conclusion in the midst of a slump (characterized by a low level of investment demand). In spite of the fall in demand for capital goods, these production processes must, for technical reasons, be completed in order to avoid the total loss of funds already invested. Price movements which might ordinarily be expected to curtail further production are totally ineffective. For

<sup>20</sup> The reader should now recognize the essential similarity between the monetary and nonmonetary approaches. Both theories ascribe the business cycle to the serious distortions and maladjustments that arise during the course of the cycle. The essence of these maladjustments lies in the disproportionate rates of growth of the capital and consumer goods industries during the course of the upswing. There is a persistent tendency for the former to expand at the expense of the latter.

the alternative would be incomplete investment projects totally devoid of value on the market. The resultant losses from this alternative would be much greater than those accruing from the completion of the investment projects, even in the face of shrunken demand.

### CRITICAL EVALUATION

Little need be said in the way of critical analysis, for all that was said in connection with the monetary overinvestment approach applies in this case, too. In spite of their efforts to state their ideas in nonmonetary terms, the authors of the foregoing theory have not been able to escape certain assumptions which must be made if their explanations are to hold water. It is evident that the much-emphasized expansion of profits, the real source of savings, resulting from rising prices, could not come about in the absence of an expansion of bank credit. If such an expansion did not occur, the increased demand for investment goods (deriving from profits and savings) would be compensated by a fall in the demand for and prices of consumer goods. But it is the rise in prices of consumption goods (faster than money incomes) which causes the forced decline in the community's real consumption function. And it is this forced curtailment in consumption which is ultimately responsible for the dearth of savings once wages begin to catch up with prices. In short an increased demand for capital goods can take place without a compensating fall in consumer goods prices only if bank credit is created.

If it were argued that savings might emanate from a voluntary rise in the propensity to save, the nonmonetary theory would make even less sense. For the writers explicitly assert that the distortions in the production processes arise because the allocation of factors of production is not in accord with the flow of money. If saving was voluntary, the "shortage" of consumer goods, responsible for the ultimate dearth of savings, would be meaningless. Any mention of the consumer's efforts to recover former levels of consumption clearly implies that the reduction in consumption was involuntary (forced saving) in the first place.

## APPENDIX TO CHAPTER 6

### HAYEK'S RICARDO EFFECT

It will be recalled that Hayek was the principal exponent of the Austrian School's overinvestment theory of the business cycle. This theory asserts that the break (or upper turning point) in prosperities originates in the distortion of production that develops during the upswing. As a result of the expansion of bank credit, people are forced to save against their wills, so that the investment that takes place is unwarranted, too much, that is, relative to the desires of the consuming public. In effect, there is *overinvestment*.

Sometime during the latter part of the thirties, Professor Hayek's ideas seem to have undergone a somewhat radical transformation, for now, instead of believing that the collapse of prosperities is due to overinvestment, which manifests itself in the form of a capital shortage—a dearth of savings—Hayek maintains that the breakdown is due to *underinvestment*. The one link with the past appears to be a belief that even the newly posited underinvestment situation is founded on a shortage of savings.<sup>21</sup>

The essence of the new position lies in what Hayek refers to as the "Ricardo effect." Ricardo expounded the thesis that the ratio of

<sup>21</sup> The following summary of Hayek's ideas is based on an essay in his *Profits, Interest, and Investment* (London, George Routledge & Sons, Ltd., 1939), Essay I, pp. 3-73, and on an article and "reply" that constituted Hayek's contribution to the famous "concertina" controversy. Mr. Kaldor, who engaged in this controversy with Professor Hayek, chided Hayek on his new stand, averring that Hayek was so intent on getting in an expansion and contraction of investment somewhere that it seemed to matter not which end of the cycle they came, just so the expansion and contraction occurred—like a concertina, said Kaldor. The latter appropriately entitled his contribution to the controversy "Professor Hayek and the Concertina Effect." On this controversy, see the articles by Hayek and Kaldor, in *Economica*, IX, Nos. 34 and 36 (new series, 1942).

capital to labor employed by business varied directly with real wages. Thus if prices rise and money wages lag behind, this means that real wages are falling, and enterprisers will substitute labor for capital in their productive processes. That is, they will "shorten" their methods of production, make them less roundabout, use less capital per unit of output and more labor. Conversely, if real wages rise, there will be a strong tendency to substitute capital for labor, that is, employ more roundabout production techniques, use more capital per unit of output.<sup>22</sup>

In illustration of the Ricardo effect, Professor Hayek develops the following example: Assume a firm has at its disposal two alternative methods of production, each yielding a 6 per cent (expected) rate of profit *per annum* (i.e., the marginal efficiency of capital of each is 6 per cent). The first of the production methods occupies one year to complete the manufacture of the commodity. The second consumes two years in the manufacture of the commodity. In order that they both yield a 6 *per cent annual* rate of return, the rate of return on the second process must be 12 per cent for *two* years. Now assume *all* costs remain the same, and a 2 per cent general rise in prices of *consumer* goods comes about (presumably, under the pressure of the expanding supply of bank credit in the course of the upswing). Since costs have remained unchanged, the 2 per cent rise in prices raises the rate of profit on both methods, but the rise is greater for the "shorter" one, that is, the one using *less* capital per unit of output. For the rate of profit (marginal efficiency of capital) on the first (one year) process is now 8 per cent, and on the second process it is 14 per cent, or 8 per cent and 7 per cent *per annum* respectively. The rise in consumer goods prices has obviously made the less capital-using method more profitable. This is what is meant by the statement that the fall in real wages (the result of rising consumer good prices and constant or lagging money wages) will cause producers to shift to less roundabout production methods, to shorten them.

But what has all this to do with business cycles and depressions?

<sup>22</sup> The substance of the so-called "Ricardo effect" is to be found in David Ricardo's *The Principles of Political Economy and Taxation* (Everyman's Library), Chapter I, Sec. V, pp. 24-27.

The answer is that the shift to less capital-using methods (per unit of output) is equivalent, for Hayek, to a decline in the rate of investment, and a decline in the rate of investment is synonymous with depression. Thus we have the situation that instead of a rise in the rate in interest rates being essentially responsible for the downturn, it is a *rise* in the marginal efficiency of capital which brings about the break in prosperity. Both are the product, however, of the increased expenditures emanating from consumers, who are in receipt of greater incomes resulting from the expansion of the money supply.<sup>21</sup> The rise in the marginal efficiency of capital causes producers to abandon any ideas of expanding investment and using more capital goods in production. Instead, in their anxiety to take quick advantage of the expected high rates of profit, they switch to the "shorter" (less capital-using) methods of production in order to get an increase in the supply of consumer goods onto the market as soon as possible.

Of course, it follows that a rise in real wages will induce the opposite effect: a lengthening of the methods of production, that is, the employment of *more* capital per unit of output. It is this sequence of events that explains the period of revival and upswing. Wages have a tendency to lag behind the fall in prices that characterize deflations and depressions. As consumer goods prices continue to fall, the marginal efficiency of capital will also fall, but it will tend to fall most in those methods of production that utilize the least capital. Thus in the illustration given above, a fall in prices of 2 per cent would, costs remaining unchanged, reduce the anticipated rate of return per annum to 4 per cent on the shorter method while reducing the profit rate on the longer method only to 5 per cent per annum. This would induce producers to shift to the latter type methods, with the result that the demand for investment, loanable funds, etc., would rise, and carry the national income and employment up with it.

<sup>21</sup> There is one important difference between Hayek's new and old arguments. The increased consumer expenditures are not made the result of previous forced saving, but are merely the result of greater consumption incomes. Thus Hayek indicates, implicitly and explicitly, his belief that the upswing can begin in a period of *unemployment*, in which case forced saving is ruled out.

## CRITICAL REMARKS

If we have anything strange in the foregoing discussion, it is the assertion, in effect, that a *rise* in the marginal efficiency of capital, with either a stable or a lagged and smaller rise in the rate of interest, results in a *fall* in investment and thus depression. Yet this point of view is not wholly without import. It depends for its validity on a set of assumptions which in certain circumstances, namely, those of inflationary full employment, make a great deal of sense.<sup>24</sup>

Under certain conditions, we might, for the sake of argument, concede Professor Hayek's point and grant that the ratio of capital to labor is reduced under the pressure of a rising marginal efficiency of capital. At the same time we could deny that such a tendency need *necessarily* entail a decline in *aggregate* investment. We are entitled to expect a high marginal efficiency to induce business firms to expand the *scale* of their existing capacity. This means that they will add to existing plant and equipment, even if these new facilities required less capital per unit of output.<sup>25</sup> With a high marginal efficiency of capital, as posited by Hayek, the stimulus to expand facilities might easily be great enough to offset the decline in demand for investment stemming from the smaller ratio of capital to labor, leaving total investment unchanged or possibly higher.

There are certain conditions, however, which must prevail if this possibility is to be at all capable of realization. First, the supply of loanable funds must be sufficiently elastic to furnish business firms with investment capital at terms compatible with the going marginal efficiency of capital. If such is not the case, then it is clear that the expansion of scale may be effectively blocked, so that the decline in capital intensity (the ratio of capital to labor) may exert a net deflationary influence on investment and national income.

<sup>24</sup> These two assumptions have been mentioned earlier in this chapter. See footnote 10 above.

<sup>25</sup> The reader should keep separate in his mind the concepts of scale and the ratio of capital to labor, called by Mr. Kaldor *capital intensity*. Scale simply refers to capacity or amount of plant and equipment, apart from the ratio of capital to labor (*capital intensity*). Thus it is possible to increase or decrease the scale of production with or without a change in the capital intensity, and vice versa.

Even if the supply of bank credit, etc., is elastic, however, this may not be enough. It is necessary also that the supply of other factors of production be fairly elastic. This is particularly true of the supply of labor. An inability to get additional labor to "work" the new plant and equipment is just as strong a deterrent to new investment as an inelastic supply of bank credit. If there is a tendency to reduce capital intensity, in addition, the shortage of labor will be magnified.<sup>26</sup>

These conditions are a very real possibility. The time when they are most likely to be realized, of course, is in times of comparatively full employment, when bottlenecks (shortages) begin to make themselves felt. Underlying Professor Hayek's whole thesis is the assumption (recognized in his controversy with Mr. Kaldor) that the supply curves of both labor and capital have become sufficiently inelastic to stop the expansion of *scale* necessary to offset the decline in capital intensity. If we grant this assumption, we are more or less compelled to grant his conclusions.<sup>27</sup> But before we do this, we must be certain that the decline in capital intensity is the inevitable outcome of the rise in the marginal efficiency of capital in the *first* place.

There are many grounds, both theoretical and empirical, for seriously doubting the importance of the shift to smaller ratios of capital to labor in the techniques of production. One of the objections, unfortunately, would take us too far afield, into a branch of economic theory, *capital* theory, which is quite outside the scope of this book.<sup>28</sup> We shall, therefore, restrict our discussion to points

<sup>26</sup> These points are not new, having been pointed out by many writers, including Messrs. Hansen and Tout in their article cited earlier; Kaldor in his article "Capital Intensity and the Trade Cycle," *Economica*, VI (New series, February, 1939), pp. 40-66; and Haberler, *op. cit.*, pp. 367-370.

<sup>27</sup> But, as Professor Haberler has remarked (*op. cit.*, p. 488), it is to be observed that we have admitted the possibility of an increase in scale's being forestalled *not* by the rise in the profit rate, as Hayek maintains, but by the inelastic supply of resources necessary to accomplish this.

<sup>28</sup> In the final analysis much of the discussion of Hayek's theory turns on the answer to the most important problem in the field of *capital* theory. Since a knowledge of this problem requires a thorough understanding of this very specialized branch of theory, we will not dwell much on it. Briefly, the problem is whether entrepreneurs should, in making investment decisions, seek to maximize what is called the *internal* rate of return on an investment or seek



which are slightly on the empirical side. First, we might question the example that Hayek uses in developing his theory. The average capital intensity of most productive methods is much greater than those values assumed by Hayek. The length of production techniques probably approximates more closely periods of three to five years. If we assume such figures as these, instead of the shorter ones of Professor Hayek, it is apparent that the 2 per cent rise in prices indicated raises profit rates almost insignificantly.<sup>20</sup> In the example given earlier, if we assume three- and five-year instead of one- and two-year production methods, the 2 per cent rise in prices would now raise the *annual* rate of profit from 6 per cent only to 6.8 per cent and 6.5 per cent respectively.

In reply, it might be argued that we can assume a rise in prices much higher than 2 per cent. But it must also be remembered that it is not the rise in product prices alone that is important, but their rise relative to the prices of *inputs*. Prices of the latter are likely to rise, too, thus offsetting much of the rises in product prices. This is true also of *wages*, particularly in periods of strong trade unions. Even if wages do lag somewhat behind rising prices, the knowledge that trade unions are sooner or later going to bring pressure to raise

to maximize the difference between discounted revenues and costs. Hayek, having been trained by Böhm-Bawerk, who strongly advocated the former, argues for maximization of the internal rate of return. Most economists outside the Austrian School advocate the latter, although not always aware of this. If one argues on the basis of the latter, as Mr. Kaldor does in his controversy with Hayek, Hayek's arguments can be quickly demolished, for it can be shown, on this basis, that a *general* change in product prices and real wages will not affect at all the ratio of capital to labor. If, however, one argues for maximizing the internal rate of return, as Hayek does, then most of his argument will stand the test of *general theory*. The one point that might still considerably weaken it is his implicit assumption of a continuous series of alternative production functions, that is, techniques of production. What empirical evidence exists points toward the opposite assumption, that of fairly fixed technical coefficients, especially in the short run. The business cycle is essentially a short-run problem and certainly Hayek treats it as such. Fixed technical coefficients of production in the short run would reduce to a minimum whatever inducement still existed for businessmen to shift to less capital-using production techniques in the face of rising product prices and falling real wages.

<sup>20</sup> See Haberler, *op. cit.*, pp. 489-490. In Hayek's original example, which we have shortened, he assumes production processes to occupy as little as one and three months. As a result, he gets increases in profits of 25 per cent and 8 per cent respectively from the 2 per cent price rise.

them may well act as a strong deterrent to a reduction in capital intensity. Production techniques are, after all, not so easily altered once a firm commits itself to one, and the knowledge that wages will soon catch up to rising prices, thus making the advantage of more-labor—less-capital-using methods very temporary, may easily be sufficient to keep present capital-labor ratios unchanged.

Along these same lines of thought, it is apparent that Professor Hayek assumes a degree of continuity in alternative production functions (techniques of production) which is very unrealistic. Even if feasible alternative production methods do exist, these alternatives might be much too discontinuous (i.e., have too wide a gap between them) for ordinary (reasonably expected) changes in the relative prices of capital and labor to take effect. This point has been mentioned earlier in another connection, together with references to a famous study made which bears out the idea of rather fixed technical coefficients of production, that is, rigid (or discontinuous) techniques of production.<sup>30</sup>

Finally, it is unrealistic to assume that entrepreneurs will abandon current investment programs in order to switch suddenly to less capital-using production methods. Sudden and complete abandonment of current investment projects would entail the total loss of capital funds already sunk into these projects. Such losses are very likely to outweigh completely whatever profit advantage (if any) may accrue from switching to less capital intensive techniques of production. There is thus good reason, both of a theoretical and an empirical variety, for doubting Professor Hayek's assertion that a rise (fall) in real wages will increase (decrease) the ratio of capital to labor in production methods. If to this we add the possibility of expansions in scale taking place to offset whatever fall in capital intensity may occur at the top of a cycle, we must treat Hayek's hypothesis as one in need of considerable strengthening, to say the least.

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<sup>30</sup> See Chapter 4, pp. 175–176 and footnote 36.

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## CHAPTER 7

### **SCHUMPETER'S THEORY OF THE BUSINESS CYCLE**

#### **INTRODUCTION**

Schumpeter's theory of the business cycle could be called the "innovations theory" of business cycles.<sup>1</sup> Cycles are the inevitable outgrowth of economic *progress* in a capitalist society. The business cycle is a fluctuation *inherent* in the economic processes of industrial change. "If there be a purely economic cycle at all, it can only come from the way in which new things are, in the institutional conditions of capitalist society, inserted into the economic process and absorbed by it."<sup>2</sup>

In the absence of innovations, capitalistic economies would gradually settle down to an equilibrium aptly described by Schumpeter as a "circular flow" economy. A circular flow economy (often referred to as the Stationary State) would be one in which the population was just reproducing itself, changing neither in size nor age distribution; tastes remain unchanged, as do the techniques of

<sup>1</sup> This theory is a type of overinvestment theory, but not in the same sense as those theories which have been discussed in the preceding chapter. It involves no capital shortage; no dearth of savings, that is, is responsible for the break in the period of the cycle called by overinvestment schools the crisis. Nevertheless, it is a theory of fluctuations in *investment*, admittedly the more volatile of the determinants of national income. In addition, while admitting the importance of an elastic banking system to his thesis, Schumpeter explicitly denies that his is a monetary theory of the business cycle, in the sense that the business cycle is purely a monetary phenomenon, and that if certain characteristics of the monetary system could be corrected, the cycle would disappear.

<sup>2</sup> J. A. Schumpeter, "The Analysis of Economic Change," in *Readings in Business Cycle Theory* (Philadelphia, the Blakiston Company, 1944), p. 7.

production; resources also remain constant through time. Moreover, there is no net saving or investment in the circular flow economy; the existing stock of capital is maintained through replacement, but there are no net additions to it. Furthermore, by the order of things, the economic process reproducing itself at *constant* rates, there is no problem of erroneous expectations; everything is perfectly foreseen, that is, every (economic) event that happens was expected to occur in the precise manner that it does. As a result, we may expect a circular flow economy finally to adjust itself to a position of perfect equilibrium: the supplies of commodities and productive agents are completely adjusted to their demands and prices (so that there is no unemployment), firms and industries are adjusted to their optimum levels of output, with the former using the optimal techniques of production.

The presence of innovation upsets all this. Net savings and investment appear, and these *fluctuate* (for reasons to be explained). The variables of the economic system change in a very unpredictable way. Uncertainty about future costs and prices arises, as new products, new methods of production, etc., continually impose themselves upon the economic horizons of businessmen. As a result of these factors (for Schumpeter the "lumpiness" or discontinuity of innovations, particularly), the economic systems in capitalist societies are constantly confronted with the problem of fluctuations in national income. But, to paraphrase Schumpeter, these are the penalty of progress.

### ***The Cornerstones of Schumpeter's Theory: the Entrepreneur and Innovations***

The basic building blocks upon which Schumpeter constructs his thesis are (1) the entrepreneur, and (2) innovations, plus the very essential characteristic of *discontinuity* in the appearance of the latter.

Entrepreneurs, in the Schumpetrian system may be described as innovators with revolutionary attitudes, capable of taking new factors (methods of production, new products) and driving them through against the inertia of humanity to establish the innovations. Businessmen, like other people, have varying degrees of imagina-

tion. Put more precisely, we may say that the economic horizons<sup>3</sup> of businessmen differ rather widely. Most businessmen are capable of handling ordinary transactions and emergencies insofar as they fall within the orbit of accepted business practice and tried business experience. However, the perimeters of business experience constitute the outer limits of the horizons of most businessmen. There are, however, some businessmen who are capable of seeing beyond the threshold of daily experience, who are not inhibited by the prospects of undertaking a venture having no counterpart in accumulated business knowledge. Relative to the former, those in the latter group are not common. The importance of this fact will soon become apparent.

The term innovation in Schumpeter's system is a very broad term. First of all, innovations are changes of very large magnitude. They represent some completely novel combination of the factors of production. However, this last statement is meant to embrace not only such things as revolutionary changes in the techniques of production (such as the steam engine, the railroad, the automobile, and electricity), but also the development of new products, the opening up of new markets, sources of supply, or even the development of a new form of organization in an industry, such as a merger.<sup>4</sup> It is necessary to see that the changes represented by the term innovation must be of very large magnitude, "in the sense that they will disrupt the existing system and *enforce a distinct process of adaptation* which should show up as such in any time series material."<sup>5</sup>

Finally, but equally important, is the trait of *discontinuity* which characterizes the appearance of innovations. By discontinuity is meant the tendency of innovations to assume "swarm-like" proportions, to appear in large clusters, instead of being evenly distributed through time. Were this not the case, that is, if innovations were

<sup>3</sup> Schumpeter defines an economic horizon "as that range of choice within which a businessman moves freely and within which his decision for a course of action can be described exclusively in terms of profitability and foresight." From *Business Cycles*, Vol. I, by J. A. Schumpeter. Copyright 1939. Courtesy of McGraw-Hill Book Company, Inc., N. Y., p. 99.

<sup>4</sup> See Schumpeter, *The Theory of Economic Development* (Cambridge, Mass., Harvard University Press, 1934), p. 66.

<sup>5</sup> Schumpeter, *Business Cycles*, Vol. I, p. 101.

evenly distributed through time, there would be no such thing as recurring booms and busts, according to Schumpeter.

The reasons for the "cluster effect" in the appearance of innovations are somewhat sociological in nature. Schumpeter groups these reasons into three general classes. First, there is the age-old antagonism with which society has viewed something new being attempted. This antagonism may range from quiet disapproval to outright physical violence. We have histories of peoples' resisting new products, preventing the introduction of new production methods, and even smashing new pieces of equipment. Secondly, there is the natural tendency of the economic and social environment to facilitate the routine, on the one hand, and place obstacles in the path of the new, on the other. It is much more difficult to obtain capital to finance the completely novel than it is to finance the tried and true. Then there is the problem of training new labor in cases involving revolutionary production techniques, or developing new sources of raw materials, and often, of opening up entirely new territories, with all the attendant difficulties involved in the latter. Producers of completely novel products and services frequently encounter difficulty in persuading the buying public of advantages of the new over the existing products. Witness the difficulty of the airplane industry in getting the public to accept the airplane as a convenient mode of transportation. Cases like this in history are legion. And, finally, there is the paucity of businessmen who have the leadership qualities to break away from the traditional and routine and undertake "new possibilities of business action which are as yet untried and about which the most complete command of routine teaches nothing."<sup>6</sup> This factor has already been discussed in connection with the earlier discussion of the entrepreneur.

As a result of the foregoing reasons, "big" innovations are slow in forthcoming. But once the initial break is made, the innovation tends to ramify throughout the economy; businessmen in the same industry, in subsidiary and competitive industries, all tend, under the pressure of competition, to duplicate it or develop variations on the basic theme. The reason is that the successful appearance

<sup>6</sup> *Ibid.*, p. 98.

of one or a few exceptional entrepreneurs facilitates the appearance of others and these the appearance of still more—a host of imitators. It is difficult to carry out new combinations, in one form or another, and only comparatively few businessmen have the qualities of leadership. But once the innovation has been successfully achieved, and the various obstacles discussed above overcome—particularly the inertia of humanity in its various forms, it becomes relatively easy for imitators to follow these pioneers. And as the task becomes easier, more people will undertake the innovation in the same or similar lines. Thus there is the tendency for innovations to come about in clusters. This point is, as we have said, basic to Schumpeter's theory.

## THE THEORY ITSELF

### *The Upswing and Prosperity*

It is time now to turn to an examination of Schumpeter's theory of the business cycle itself. We start, first, from a position of equilibrium in the economy, one in which we may suppose savings to equal investment and in which no unemployment exists, apart from that which might be associated with certain monopolistic restrictions. One or more entrepreneurs (in the sense defined above) become convinced of the profitability of a particular innovation, which they proceed to undertake. Getting the bulk of their funds from commercial banks, this (small) group of entrepreneurs then establish their new enterprises,<sup>7</sup> ordering and purchasing new plant and equipment from existing firms. On the heels of their apparent success in overcoming the various problems associated with innovations, together with the experience that is thus accumulated, other businessmen follow in increasing numbers to introduce the same or similar innovations in the same or related fields of enterprise. There develops the now familiar pattern of expansion. The demand for

<sup>7</sup> Schumpeter firmly believed that the bulk of innovations is carried out by new firms. While this was undoubtedly true of the nineteenth and early twentieth centuries, it would appear that in recent years it is the large corporations who, for the most part, are responsible for innovations. The reasons are manifold and are probably familiar to the reader. This point, however, is not fundamental to Schumpeter's thesis.



investment funds is far too great for the supply of current savings. Hence the commercial banks supply the tremendous demand for investment funds via the creation of bank credit.

Since we started from an equilibrium of full employment, the resources necessary for the construction of new plant and equipment can be had only by bidding them away from existing firms, primarily those in consumer goods industries. Many of the "older" firms are now faced with increased costs, and many thus produce at a loss or are forced out of business altogether. For the most part, however, this will not be true, inasmuch as incomes will also rise as the proceeds of the bank loans are paid out to the various factors employed in the capital goods industries, who respond the bulk of their increased receipts. We may, in fact, expect many of the old firms to be making profits, for in spite of the fact that costs are up, business incomes in the early stages of expansion are likely to rise at faster rate, if for no other reason than the fact that the old firms will have to pay only part of the increased payments to the productive agents (namely, those that they still employ), while, at the same time, they will receive (before the new products enter the market) all of the newly created income. In effect, we have that period of the business cycle known as prosperity.

### *Recession: A Period of Adaptation*

However, the results of the innovations must finally make their appearance on the market. These new "products" intrude on the economic world at an increasing rate. At the same time, they necessarily compete with the old products, with the result that the revenues of the old firms are considerably reduced. The forces of recession are now at hand. Recession in the Schumpetrian system, however, is devoid of the evil connotations usually associated with it in business-cycle literature. For, to Schumpeter, the period of recession marks the attempt of the economic system to find its way

<sup>5</sup> The term "product" is placed in quotes to emphasize the fact that it is not to be construed in the narrow sense of some new consumer good. Product is meant to stand for such things as new production methods, like the assembly line, new transportation methods like the railroad, the opening up of new territories, and the discovery of new markets or sources of raw materials, etc., as well as the development of new commodities.

back to a new equilibrium position. This period might better be labeled a period of *adaptation*. Under the forces of competitive pressures, the old firms are forced to undergo considerable and difficult adaptations to the situations created by the innovations.

The term adaptation should imply to the reader that not all old firms are forced from the economic arena.

For some of the "old" firms new opportunities for expansion open up: the new methods or commodities create New Economic Space. But for others the emergence of new methods means economic death, for still others, contraction and drifting into the background. Finally, there are firms and industries which are forced to undergo a difficult and painful process of modernization, rationalization and reconstruction."

It is not difficult to visualize what is meant by these various types of adaptation. Picture, for example, the effects of the development of the railroad. For many competing methods of transportation, the railroad meant virtually total oblivion, as is instanced by the canal. For others, like river transportation, the railroad meant considerable contraction and modernization. In nontransport industries, the railroad upset all cost calculations based on location, and altered radically the optimal location of plant in many industries. For others, the railroad meant new competition, heretofore non-existent because of prohibitive transportation costs. Thus entire industries suffered severe dislocations, many firms had to relocate, some nearer to markets, others nearer to sources of supply. Still other firms had to alter their production methods, modernize, in order to withstand the new competition of firms brought into the picture by the improved means of transportation. In sharp contrast with these, of course, for many firms and industries the development of the railroad meant tremendous expansion under the impetus of new and broader markets, lower costs of raw materials, etc. The reader may similarly envision for himself some of the ramifications of the development of the assembly-line technique of production, of the development of electricity, of the *steam engine*, and many other of the startling innovations that have marked industrial and economic history.

The period of readjustment and adaptation for old firms is made

<sup>9</sup> Schumpeter, *Business Cycles*, Vol. I, p. 134.

more difficult by the persistent tendency of new firms to utilize the receipts from the sale of their new products to repay outstanding bank debt. Thus we have the well-known period of credit deflation setting in, reducing the national money stream, and, therefore, the demand and revenues of the older firms, making the present position of the latter still more awkward, and accentuating the recession. Schumpeter describes this process as one of "Autodeflation," to emphasize the fact that the commercial banks are purely *passive* instruments in the process. Autodeflation

occurs without any initiative on the part of banks and would occur even if nobody ever went bankrupt or restricted operations, and if no bank ever called or refused a loan. . . . Their (money and credit) behavior is nothing but adaptation to an underlying economic process by which that behavior . . . is explained, while *the reverse is not true*.<sup>10</sup>

If the reader is wondering why the repayment of bank debt on the part of some businessmen is not followed by new loans on the part of others, Schumpeter has anticipated him on this point. As long as new enterprises continue to make additional investments, there is no reason why the foregoing period of adaptation *has* to develop into a downturn and recession. Reasons, then, must be posited to account for a slackening of entrepreneurial activity. These are easily supplied. In the first place, the continued appearance of new firms has a tendency to raise the costs of all concerned, as the demand for the factors of production continues strong. In addition, as new firms continue to appear and become better organized, the stream of products flowing into the market takes place at an increasing rate. This forces down the general level of prices for all firms, new and old, and, consequently, profit margins are gradually eliminated, even those of the new firms. The disappearance of profit margins reduces the marginal efficiency of capital of new investment in innovations to the point where they are (temporarily) financially unattractive.

Even more important as an explanation for the development of the period of adaptation into a recession is the vast amount of *uncertainty* which ordinarily characterizes such periods. The economy

<sup>10</sup> *Ibid.*, pp. 136-137. Italics supplied.

is in a very disequilibrated state, created by the innovational activity of the entrepreneurs. Their activities have radically altered the data of the system; all values and estimates must be revised again and again. These revisions plus the successive attempts at adaptations to the constantly changing situation imply that the economy in general is in a state of flux. Costs and prices, therefore, are extremely difficult to estimate, even if some profits still seem to be in the offing. Accurate planning in new investments becomes impossible, and this situation acts as a deterrent to the planning and formation of new enterprises.

In order to carry out additional innovations, it is necessary to wait until things settle down as it was in the beginning to wait for an equilibrium to be established before embarking upon the innovations the effects of which we are now discussing. Therefore, along with new products streaming into markets, and with repayments (of bank debt) increasing in quantitative importance, entrepreneurial activity tends to slacken, until finally it ceases entirely.<sup>11</sup>

The period of recession is necessary, then, to allow the economic system to adjust to the innovations and establish a new equilibrium. The recession is something else, too, however. It is a period which fulfills what the boom promises. The stream of goods is enriched, production is partly reorganized, costs of production are lowered, as the new methods are copied and improved, and additional minor innovations are induced by the grander ones that characterized the upswing. Some industries expand into the new investment opportunities made possible by the innovations; others readjust and modernize their methods under the pressure of competition; "much dead wood disappears."

### *The Explanation of Deep Depressions*

It is obvious from the foregoing remarks that the period of recession as viewed by Schumpeter is quite different from that to which we have grown accustomed. Schumpeter does not deny the existence of deep depressions; rather he believes that they are not *inherent* in the functioning of the economic system. Deep depressions are to be accounted for by referring to factors which are

<sup>11</sup> *Ibid.*, pp. 135-136.

actually extraneous to the underlying processes of discontinuous innovations.

The seeds of the depression spiral are sown in the course of the prosperity by essentially "secondary" developments which take place during this period. Almost invariably a secondary spiral of overoptimism develops during the course of the upswing. Consumers and businessmen alike become overly optimistic with respect to the maintenance of the rate of increase in their incomes that characterizes the upswing. Consumers borrow from banks to finance various types of consumer durables; often a real estate boom develops in housing and agriculture, with a tremendous expansion of mortgage credit ensuing. Businessmen in old firms anticipate a maintenance of the current (high) demand or even an increase, and expand their orders for inventories and new plant and equipment where possible. All these actions entail a great and, perhaps, excessive expansion of bank credit. Many maladjustments are likely to develop, based not only on what we might call speculative overoptimism, but simply on errors of judgment, which are the product of the disequilibrated state of affairs that the innovation boom inevitably produces.

Schumpeter calls this sequence of events "Secondary Waves" being imposed on the "Primary Waves" of expansion induced by the innovation processes. These secondary waves are generally represented by overexpansion and overindebtedness, both on the part of the consumer and the businessman. Once the downturn induced by the underlying innovation processes sets in, however, a secondary wave of deflation is superimposed on that which we have described as recession. Recession unaccompanied by this secondary deflation is difficult enough, driving, as it does, totally obsolete firms entirely from the scene, and requiring of those that remain a painful period of adaptation to the new situation if they are to continue to survive. On top of this, comes now the crumbling process of *liquidation*: of those firms who have overexpanded, for speculative or other reasons, and of those households that have burdened themselves with consumer debt, all in erroneous anticipation of continued prosperity and employment. Then, of course, the contraction of bank credit and national income follows at a much more severe rate than that

induced by the "normal" repayment of debt by the successful innovators.

A period of extreme overpessimism is likely to ensue. Disappointed businessmen will contract violently, *underestimating* the prospects of the future in their extreme pessimism. A rush for liquidity is likely to ensue, to build up cash balances against further emergencies. Banks are likely to call loans, refuse to renew expiring ones or grant new ones.<sup>12</sup> This process of extreme deflation destroys entirely the equilibrating forces that are at work in the recession, and drives the economic system well past the new "neighborhood of equilibrium" into the dire throes of depression.

### *The Recovery*

Are there any forces at work in the system which will bring the depression to an end and initiate a process of recovery? The answer must be divided into two parts. If, for the sake of argument, we assume that the deflationary process comes to a stop, for one reason or another, Schumpeter optimistically believes that recovery will necessarily set in. To deny that businessmen will act in a manner conducive to recovery "and eventually to a neighborhood of equilibrium, would be synonymous with saying that they will deliberately forego gains and incur losses which it is in their individual power to make or to avoid, and scrap equipment which could be profitably used."<sup>13</sup> While such a situation may prevail in certain isolated sectors of the economy, it is unrealistic to expect it to prevail throughout the entire economy.

The problem then becomes one of determining whether the depressive process stops of its own accord, "short of universal starvation." Schumpeter sees no a priori generalization that can be drawn in answer to this problem. There are certain forces at work which tend to offset the deflationary forces somewhat. One of these is what Schumpeter terms the "dilution or diffusion of effects." That is, the effects of the individual events that characterize the deflationary spiral (bankruptcies, shutdowns, collapses of individual markets,

<sup>12</sup> For a more elaborate discussion of what amounts to Schumpeter's secondary waves of inflation and deflation, see the discussion of expectations in Chapter 9.

<sup>13</sup> Schumpeter, *Business Cycles*, Vol. 1, p. 152.

etc.), while they tend to spread, also tend to do so with increasingly *diminished* force. "Each addition to unemployment will cause further and further unemployment but, *taken individually*, at a decreasing rate."<sup>14</sup> Not all firms will be equally susceptible to bankruptcy, even in the face of collapse of their debtors. Thus in the absence of breakdowns due to factors not connected with the downward spiral, this spiral will not be self-feeding, but will tend gradually to peter out.

Another possible offsetting tendency may appear from what Schumpeter calls "depression business." This is a term used to describe the situation wherein the collapse of some firms means the ability of the remaining firms to expand into additional areas provided by the departure of the other firms. Thus at the same time there are losses and contractions in some sectors of the economy there may be gains and expansions in others.

Most important, perhaps, as a counteracting tendency, is the fact that the marginal propensity to consume is ordinarily less than one. Consumption, therefore, tends to decline less than income, so that inventories will be depleted to the point where they are in need of rebuilding. Furthermore, there are absolute limits below which consumption is not related to national income.<sup>15</sup> There are also incomes and social strata which are comparatively insensitive to depressions, whose expenditures will be more or less sustained in the face of the downward spiral.

"But though it may thus be shown that a restorative tendency will develop to work against the spiral, there is nothing to prove that it will prevail against it."<sup>16</sup> Hence from the viewpoint of general theory, the situation is conceivable where the economic system continues its downward spiral without recovery, unless some *outside* force like the government or some chance event intervenes to bring the process to a halt.

<sup>14</sup> *Ibid.*, p. 153. Italics Schumpeter's.

<sup>15</sup> This point is represented on a propensity to consume—national income diagram by the point of intersection between the consumption function and the OY axis. Of course, to the extent that national income is less than the level at which the consumption function and the 45° line intersect, consumption is taking place out of capital, that is, capital is not being replaced.

<sup>16</sup> Schumpeter, *Business Cycles*, Vol. 1, p. 154.

One thing should be noted before we bring this description of Schumpeter's theory of business cycles to a close. It might have seemed peculiar to the reader that we left out as one of the restorative forces in times of depression the factor of innovations. However, Schumpeter firmly rejects the idea that innovations are economically feasible in the face of the overwhelming disequilibria that prevail throughout the economic system during periods of depression. The impossibility of making any accurate calculations during times like these militates against the possibility of even the boldest and most imaginative of entrepreneurs undertaking any important innovations. Not until the economic system has proceeded along the road of recovery sufficiently to approach at least a strong semblance of equilibrium will entrepreneurs appear in sufficient force to start the economy off again on another innovational boom.

### *Innovations as an Explanation of Three Categories of Cycles*

Innovations are obviously not all of the same magnitude. Some require longer periods to be put into effect and adapted than others. Schumpeter uses this fact to explain certain cyclical phenomena referred to in Chapter 1. There it was explained that, broadly speaking, there are three categories of cyclical movements in business activity which have been observed, more or less. These consist of the 4-year minor cycles, the 6- to 13-year major cycles, and the 40- to 70-year Kondratieff cycles. Schumpeter explains these three types of cycles by referring to the differences in magnitude of various innovations. The ramifications of some innovations are so great that they give rise to periods of installations and adaptation occupying half centuries or more; thus are explained the Kondratieff long-wave movements. Other innovations are less revolutionary in their implications, and so require only a decade or so for adoption and adaptation; these give rise to the major cycles, called Juglars (after the French economist, Clément Juglar). Finally, there are innovations of sufficiently small magnitude to be put into effect and adapted within the relatively short period of 48 months or so. These explain, for Schumpeter, the minor, or Kitchin (after the economist Joseph Kitchin), cycles of approximately that length. Of course, the precise time intervals embracing these three groups



of cycles should be taken as very elastic and the figures given merely as rough estimates.<sup>17</sup>

#### CRITICAL REMARKS

Some of the following comment is rather sociological in character. This perhaps is natural, however, for many of Schumpeter's basic assumptions are sociological in nature. As a matter of fact, it is only his basic assumptions and ideas that call for much comment, for the rest of the discussion is, on the whole, not novel.

#### *The Realism of Schumpeter's "Entrepreneur"*

We may begin by questioning the validity of the first building block in the Schumpetrian system, namely, the exceptional entrepreneur, the innovator. There is a certain lack of realism in contrasting the inertia of most people with the revolutionary attitudes of the few innovators. The distribution of ability to introduce innovations among businessmen is more likely rather gradual.

Moreover, the extreme emphasis placed on the entrepreneur creates a very strong *personal* element in the path of industrial progress. Whether one agrees with this view depends to a great extent on one's theory of history, that is, whether one believes in what is often called the Great Man Theory, or believes, instead, that history is the net product of great, underlying socioeconomic forces, the movements of which are beyond the compass of any single individual's influence. The present writer happens to ~~adhere~~ adhere to the latter view, and, consequently, finds Schumpeter's entrepreneur assigned far too much importance in the history of technological and economic progress. Placing so much importance on the role of the entrepreneur results in too great a role for the element of *chance* in the path of technological progress. We are made dependent on the happening along of the right entrepreneur at the right moment—one, or a few, who happen to see the possibilities of the particular innovation. It would seem preferable to be in the position of making the particular *innovator(s)* the accident in history rather than the innovation. For innovations are the undeniable

<sup>17</sup> For a more detailed discussion of this "three schema" hypothesis, see *ibid.*, pp. 161–174.

product of the inexorable, underlying technological and social movements which determine progress. There comes a time in the history of industrial progress when a particular innovation is required, be it the development of a steam engine, a cotton picker, or the expansion of the railroad into the western part of the United States. The individual *unconsciously* assumes the burden of innovating.<sup>18</sup>

Along the same lines, a note of caution should be injected into the interpretation of the "discontinuity" factor in Schumpeter's system. While there is evidently a great deal of irregularity in the rate of innovation, the reader should not allow this fact to blur the essential historical continuity in the development and appearance of innovations. A long series of events—scientific, technological, economic, and sociological—invariably precede the actual innovating process. The innovation might be said to represent, in some sense, the *culmination* of these different categories of forces and events. On this account, it is seldom fruitful to view an innovation as an *independent* historical entity, an historical accident. Rather, it is the *entrepreneur*, the individual innovator, who is the historical accident, never the innovation itself. And although there is great irregularity or discontinuity in the rate of innovation, we would observe that this element of discontinuity is traceable not to any individual entrepreneur, but to the absence of perfect smoothness in the movements of the technical and social sources of innovations.

### *The Importance of Innovations in the Explanation of Business Cycles*

Perhaps the most important contribution of Professor Schumpeter to our understanding of business cycles is his great emphasis

<sup>18</sup> It makes for an odd kind of history to say, for example, that the expansion of the railroads from the middlewest to the west coast of the United States was dependent on the appearance of an entrepreneur by the name of James J. Hill. The implication of such a position is that if Mr. Hill had not lived, or if something had intervened to prevent his (chance) linkage with the railroad industry, there would have been no railroad to the far west (in 1869 as a result of the juncture of the Union Pacific and the Central Pacific Railroads). The obvious absurdity of such a position is further revealed by a knowledge of the history of the economic and social forces which provided the impetus for the extension of rails to the coast *and* the history of Mr. Hill himself.

on the close connection between economic progress and the business cycle.<sup>19</sup> Defining the term "innovation" in its broadest sense, to include new commodities, the discovery and development of new territories, sources of supply, and markets, in addition to technological advances, there is little doubt that the great periods of boom in the past have been generated by new bursts of innovation. The enormous volume of new (autonomous) investment for which these intense spurts of innovation have been responsible has certainly been a prime, if not the only, factor in the violent fluctuations of national income which characterize the major cycles. This is true, as Schumpeter has pointed out, in a direct as well as an indirect sense. For waves of innovations in the past have induced not only investment mainly designed to embody them alone (the so-called Primary Waves), but also have induced investment based on speculative waves of optimism (the so-called Secondary Waves).

Moreover, it is evident that major depressions in the past have originated, to a great extent, in the petering out of the process of capital formation. That is to say, the innovations which gave rise to the boom in the first instance are completed, and the rate of investment shrinks accordingly. On top of this, the decline in innovative (or, what we have called heretofore, autonomous) investment tends to give rise to Secondary Waves of contraction under the pressure of liquidity crises and extreme waves of overpessimism.

The deepest depressions seem also to have been founded largely on abnormal shortages of investment opportunities.<sup>20</sup> As Professor Hicks has remarked, very often the dearth of investment opportunities finds its origin in the excesses of the boom, for the specula-

<sup>19</sup> This contribution is, of course, not unique, as Professor Schumpeter himself pointed out. The names of D. H. Robertson, Knut Wicksell, as well as Spiethoff and Cassel, are all closely connected with the idea that business cycles are a product of the irregularity in the rate of technological progress. But it was Schumpeter who made the idea *central* to his system more than the others and who wrote most extensively in assertion of this thesis, culminating his efforts with his monumental two volume work, *Business Cycles*.

<sup>20</sup> Implicit in this statement is the fact that there have in the past never been offsetting rises in the propensity to consume. As a matter of fact, the rush into liquid assets and cash indicates, in part, that the consumption function actually tends to fall during periods of downswing. There are of course ample reasons for this; these have been discussed in connection with short run influences on the propensity to consume in Chapter 2.

tive atmosphere of the boom may often cause innovations to be introduced earlier than otherwise might have been the case, thus depriving the immediate future of investment opportunities.<sup>21</sup> The importance of this problem of dearth of investment opportunities has recently come in for lengthy discussion in the course of the bitter controversy concerning the validity of the Stagnation Thesis. The latter is, of course, nothing but a hypothesis concerning the future rate of innovation.

At this point it is worth while noting that Schumpeter's particular explanation of the downturn is really a superfluous tool in his system. His explanation, it will be recalled, is, principally, that innovations upset the parameters (data) of the economic system to such an extent as to make calculation of costs, prices, and profit margins, etc., impossible. The result is that entrepreneurs hold back investment projects until the system settles down close to a neighborhood of equilibrium (in something resembling the "circular flow" sense). It seems to the present writer that Professor Schumpeter is much too bound up by this equilibrium concept. Until the economic system reaches such a stage, the millennium might be required. However, it does not appear necessary to resort to such analysis.

Schumpeter goes to great lengths to indicate that innovational (major cycle) booms can usually be associated with one particular industry, "or a few industries," which are undergoing great expansion. There is a close connection, that is, between leading industries in a business-cycle upswing and the industries in the forefront of economic progress. Now there appears to be no a priori reason why a slackening of investment in these industries, as they complete expansion, should suddenly give rise to a burst of expansion elsewhere. The same is true of the discovery of new markets and the opening up of new territories, etc. Indeed, a regular rate of innovation would undoubtedly be a constant source of amazement. On the contrary, there is every reason to expect these processes of innovation to be characterized by discontinuity or irregularity. Irregular rates of innovation are sufficient to pro-

<sup>21</sup> See J. R. Hicks, *Value and Capital*, 2d ed. (London, Oxford University Press, 1946), pp. 299-302.

vide similarly irregular rates of autonomous investment. And these fluctuations in the rate of investment are all that is needed to explain the fluctuations in the national income. This is particularly true if we remember the so-called Secondary Waves of expansion and contraction which invariably accompany the Primary Waves of innovational investment.<sup>22</sup>

Pursuing the same line of thought, we would question Professor Schumpeter's assertion that recovery is automatic once the downward spiral of deflation and depression comes to a stop. The reader may recall that we quoted Schumpeter to the effect that a denial of this assertion was equivalent to saying that businessmen will deliberately incur losses and avoid gains and scrap plant and equipment that might be profitably used. There seems to be implied in this remark the idea that depression somehow is to be associated with capital *decumulation*, that is the failure to replace worn-out plant and equipment. While this *might* be the case, certainly there is no basis for generalizing on this possibility, outside of inventories, which are invariably reduced during depressions.<sup>23</sup> Depressions are founded primarily on a cessation of capital *accumulation* or investment in plant and equipment. The sharp contraction of monetary demand that invariably accompanies the contraction of investment may easily be sufficient to induce businessmen to allow existing plant and equipment to lie idle in part or *in toto*. Certainly there is enough historical experience to attest to this fact.<sup>24</sup> In the absence of innovation-induced investment, there is no reason why a (capitalist) economy cannot reach a certain low level of income and employment and remain there. And businessmen may certainly be acting in complete conformity with principles of profit maximization, insofar as profits are, in fact, *expected* profits. There may be spurts of *induced* investment during these times, particularly in inventories, but these seldom, if ever, are capable of carrying the economy upward either to a boom or Schumpeter's equilibrium.

<sup>22</sup> All this assumes a certain stability or, at least, nonoffsetting movements in the consumption function. See footnote 20 above.

<sup>23</sup> See the section on inventory fluctuations in Chapter 9.

<sup>24</sup> We include in this statement recognition of the tendency for investment in inventories to become positive as it becomes evident that stocks are insufficient to meet the demand that is maintained.

Moreover, when the forces of growth and economic progress are sufficiently strong, as they have been in the past (*at least up to the thirties and maybe beyond*), innovators do not wait upon the approach of the economy to a neighborhood of equilibrium. In an expanding economy, the forces of *growth* make the marginal efficiency of capital in the industries desiring to innovate high enough to burst through the pale of pessimism that reigns elsewhere, ultimately dispelling the latter and converting pessimism to optimism. When this does not happen, the problem is beyond the scope of equilibrium economics. It is, rather, another aspect of the same economic growth upon which Professor Schumpeter predicates his whole system of analysis in the first place, perhaps a problem of secular stagnation, or possibly one involving a downswing of the Kondratieff long waves.

Despite the last few rather critical remarks that have been made, the writer does not want the reader to lose sight of the fundamental contribution that Professor Schumpeter has made to business-cycle analysis. This contribution consists in the great emphasis placed on the close connection between economic growth and progress and economic fluctuations. Innovations in the history of modern capitalism have undoubtedly been one of the great driving forces behind the major business cycles of the past. And their lack of smoothness in appearance, their characteristic irregularity (plus the secondary waves of expansion and contraction which they seem to engender) has been one of the chief elements in those fluctuations in national income we call business cycles. Whether they will remain as important in the future is a question we will leave to the future itself to answer.<sup>25</sup>

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<sup>25</sup> Perhaps another contribution of Schumpeter's that might be mentioned is the (very correct) emphasis he placed on the role of a fractional reserve commercial banking system as the great *facilitating* factor in the business cycle, while denying at the same time that it alone can be used to explain uniquely the cycle.

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## CHAPTER 8

### *UNDERCONSUMPTION THEORIES*

#### INTRODUCTION

Underconsumption theories are probably the oldest class of currently important business-cycle theories. They date back as early as Sismondi, who wrote during the first quarter of the nineteenth century. Other important early writers in this school include Rodbertus, Malthus, Marx, and Lord Lauderdale. Only two modern versions of the underconsumption theory will be discussed here, that of Messrs. Foster and Catchings, on the one hand and that of the English economist, J. A. Hobson, on the other. We confine our discussion to these writers because they are among the very few modern exponents of an underconsumption explanation of the cycle who have written with economic sophistication on this subject. Hobson's analysis, in particular, is (in the present writer's opinion) the most detailed and rigorous, and it more or less embodies all the ideas of present-day underconsumption theorists, both in the United States and abroad. The analysis of Foster and Catchings is included primarily because of the tremendous vogue which their ideas enjoyed in the United States during the twenties. While their thesis was accepted primarily by the untutored, they were important enough to invite a torrent of critical literature from the economics profession.

It is interesting to note that, on the whole, proponents of an underconsumption explanation of the cycle have generally been treated as heretics by their fellow economists. J. A. Hobson, for instance, was refused permission to teach in English universities because of his allegedly absurd point of view. Only very recently has



it been possible for an economist to defend an underconsumption explanation of the business cycle and still retain the esteem of his colleagues. The principal reason for this attitude toward underconsumption theorists lies in the fact that their ideas constitute a complete denial of one of the most important dogmas in the history of economic thought, namely J. B. Say's *Law of Markets*. Say's Law held that since people produced goods in the expectation of exchanging them for other goods, it follows that every product produced is a demand for and means of buying other goods. *Supply creates its own demand*. It follows from Say's Law that *general* overproduction of consumer goods is an impossible situation. This view of economic events was accepted by the vast majority of economists until very recent years. Any economist who supported an underconsumption theory of the cycle was thereby denying the "truth" embodied in Say's Law, and hence was not worth his salt. Today it is generally accepted that under certain conditions, Say's Law, as stated above, will not hold.

A brief summary of the underconsumptionist position is in good order at this point. In the course of the upswing, there is great expansion in the capital goods industries. The funds for this expansion derive from current savings and from expanding bank credit. Furthermore, because the processes of production are roundabout, so that final consumer goods are a long time forthcoming, prices will have a tendency to rise as money incomes increase, and as consumers use their greater total monetary demand to bid up the prices of the existing supply of goods. This price inflation is a further stimulus to investment. However, once the processes of production are completed, the volume of consumer goods output will spurt far beyond the capacity of the economy to absorb it. As a result there will appear a glut, stemming from the fundamental inadequacy of consumer purchasing power, on the market for consumer goods. Prices will fall, and profit margins will be wiped out. The consumer goods industries will curtail output, and a general depression will follow.

Let us turn now to a more detailed consideration of the theories of Foster and Catchings and of J. A. Hobson.

**THE THEORY OF MESSRS. FOSTER AND CATCHINGS*****The Dilemma of Thrift***

These writers were confronted by what they felt to be the "dilemma of thrift." They were aware that savings are indispensable if capital goods are to be forthcoming, and if higher living standards are to be provided or a growing population supported. These latter are the marks of a progressive economy. But an analysis of the economic processes (particularly the flow of money) convinced Foster and Catchings that saving also results in a level of demand which is not sufficient to absorb, at profitable prices, the increasing outflow of consumer goods. Economic depression arises out of this unbalance. Savings then are necessary, but at the same time they are an evil. This is the great dilemma of thrift.

***Savings as the Cause of the Crisis***

We have defined saving as the act of not spending some part of current income on consumption. The two important forms of saving envisaged by Foster and Catchings are: voluntary abstinence by individuals, and the retention of profits by corporations. If these retained corporate earnings are used for investment in new plant, equipment, and inventory, then, say Foster and Catchings, overproduction is bound to develop. Overproduction, in their sense, means that the new capital goods ultimately bring forth a supply of consumer goods that cannot be sold at the current level of prices. Prices, therefore, fall until profit margins are turned into losses, and production collapses.

***The Investment Process.*** Let us examine their reasoning a bit more closely. If the savings of individuals or corporations are utilized for investment, this means that additional labor may be employed for the production of capital goods. During the time involved in the construction of the new capital goods, nothing happens to disturb the equilibrium of the economic system. The incomes of the workers engaged in the construction of the new capital goods will be spent by them on current consumer good production, as will also those portions of incomes of all other people which are not

saved. Hence the as yet unchanged current output of consumer goods will continue to be absorbed at current (profitable) prices.

*Increased Rate of Production.* Eventually, however, the construction of the new capital goods will be completed. The labor force engaged in the production of consumer goods now has additional (and perhaps more efficient) capital equipment with which to work. In effect, the processes of production have been made more capitalistic, or roundabout.<sup>1</sup> Our experience in the course of development of our increasingly capitalistic and roundabout production methods reveals that they have been responsible for higher and higher levels of consumer goods output. In the present case, then, the net additions to existing capital stock must result in a great expansion of current consumer goods production.

*The Crisis.* There has been no corresponding increase in consumers' incomes, however; the aggregate money stream (and hence total monetary demand) is unchanged. This being the case, consumers are unable to purchase the increased output of consumer goods at current prices. Either these goods pile up on producers' shelves or prices will fall. In any event, the marginal efficiency of capital will decline and, *ceteris paribus*, production and investment will decline. A depression is at hand.

### *The Role of Bank Credit*

Thus far the discussion has proceeded on the assumption of a fixed supply of money. Since, in fact, the money supply may be increased through an expansion of bank credit, we might suppose that the deficiency in demand might be overcome by means of such an increase in the money stream. The expanded bank credit should increase aggregate monetary demand and permit the purchase of the increased supply of consumer goods (which brings on the crisis) at current prices.

*Bank Credit Used in Production.* Foster and Catchings take exception to this reasoning. The trouble is, they say, that newly created bank credit falls principally into the hands of *producers* by

<sup>1</sup> By "more capitalistic or roundabout" is meant that more capital per unit of output is being used than before, plus the fact that new stages of production have been added.

whom it is used to turn out still *more* goods intended to be sold at a profit. They argue that the rate of expansion of bank credit shows a persistent (though not necessarily inevitable) tendency to lag behind the rise in total productivity (generated by the increasingly roundabout processes of production). At its best, the expansion of bank credit can only postpone the insufficiency of consumer demand. Eventually, there will be a further increase in the supply of goods, exceeding the increase in purchasing power.

Producers use the expanded bank credit to employ additional laborers for the construction of new capital goods. Since the production of these goods takes time, the workers engaged in their production may spend their new incomes on the existing supply of consumer goods (thereby tending to force a rise in consumer goods prices). In time, however, the new capital goods will begin to turn out consumer goods. Furthermore, these newly created capital goods will increase the average productivity of labor. Hence, the increase in the supply of goods will once more outrun the demand. In answer to those who would suggest a further expansion of bank credit to forestall this, Foster and Catchings reply that, in the end, such an expansion would result in a still greater supply of consumer goods (as a result of the use of bank credit for investment purposes). Their reasoning on this point may be illustrated by means of Table 10.

**Table 10 Money and Production**

|                                      | <i>Year I</i> | <i>Year II</i> | <i>Year III</i> |
|--------------------------------------|---------------|----------------|-----------------|
| Output (units of goods)              | 1,000,000     | 1,100,000      | 1,200,000       |
| Sales (units of goods)               | 1,000,000     | 1,000,000      | 1,100,000       |
| Receipts (dollars)                   | 1,000,000     | 1,090,000      | 1,180,000       |
| Wages paid (dollars)                 | 900,000       | 990,000        | 1,080,000       |
| Dividends (dollars)                  | 100,000       | 100,000        | 100,000         |
| Money stock at end of year (dollars) | 900,000       | 990,000        | 1,080,000       |
| Price level (index no.)              | 100           | 109            | 107             |

In Year I the economy is in an equilibrium position. We may assume this to be a base year, so that the price index is 100. One million units of goods are produced and sold for \$1,000,000 to wage earners and stockholders. Wage earners receive \$900,000 in wages; stockholders receive \$100,000 in dividends. These two income

groups are assumed to spend all their incomes in purchasing the one million units of production.

In Year II it is assumed that an additional sum of bank credit (10 per cent of the existing money supply) is extended to businessmen, so that the money stock increases from \$900,000 to \$990,000. This additional \$90,000 of bank credit is used by business firms to pay workers employed in the construction of new capital goods. Since this is new, more efficient equipment, workers are assumed to be 10 per cent more productive working with this capital than without it. Hence workers paid \$900,000 produce a total product worth \$1,000,000. The new laborers are also assumed to have the same productivity as the old, so that there is a 10 per cent increase in output—from 1 million to 1.1 million units. However, it is assumed that the additional 100,000 units of output do not become available for sale during Year II; thus the additional amount of money is spent on the same total quantity of production as in the previous year, with the result that the level of prices rises from 100 to 109.

In Year III an additional \$90,000 of credit is extended by the banks to businessmen, which the latter again use to finance the construction of new capital goods. All the assumptions applied to Year II are also applicable to Year III. However, the 10 per cent increase in output which was yielded in Year II becomes available for sale in Year III, so that (on the basis of the figures given in the above table) the price level in Year III falls below that of Year II, in spite of the expansion of bank credit. Thus Foster and Catchings conclude that a price decline, and hence a depression, can be averted only if credit expands at an *accelerating* annual rate. Later in this chapter, we shall have occasion to analyze this illustration and its conclusion more critically.

### *The Crucial Role of Profits*

The fundamental source of all the trouble, according to these writers, is the fact that producers are engaged in business to make profits, but invariably reinvest the bulk of their profits, instead of distributing them (to stockholders to be spent, presumably, on consumption).

. . . When individual income is [saved and] invested, and thus used twice in succession to bring goods to market, it creates a deficiency of purchasing power. . . . To prevent such a deficiency . . . money which is used in the production of goods must be used in the consumption of goods before it is used again in the production of goods. . . . In short, whenever money is used twice in succession to produce goods, as it is in many cases when individuals invest their incomes, it is doing its part . . . to stock the market beyond the capacity of consumers to buy at current prices.<sup>2</sup>

### THE THEORY OF J. A. HOBSON

#### *Overproduction the Cause of Depressions*

The student should be aware by now that cyclical depression is synonymous with the shrinkage in total monetary demand. For whatever reason, a change in the stream of national income occurs when savings differ from investment. When savings exceed investment, we have seen that national income falls, *i.e.*, the money stream (source of total effective demand) shrinks. It is Hobson's thesis that this shrinkage in total effective demand stems from a failure of consumption to keep up with production. It is true, he says, that the depression itself is marked by a state of *underproduction*. But careful scrutiny of the situation leading up to the depression reveals that the latter is the product of *overproduction* of consumer goods during the period immediately preceding it. The high level of activity which characterizes the boom years generates a volume of output too large to be sold at current prices. Prices must be lowered in order to sell the accumulated stocks, but such a reduction causes them to fall below costs of production so that production and investment are curtailed. Overproduction, glut, and stoppage of production mark the sequence of events.

*Disproportionate Amount of Saving.* Why does consumption lag behind production? Or, as is the same thing, why does the rate of production advance more rapidly than the rate of consumption? *Because the propensity to consume is a highly stable function and is too low.* This stability results from the traditional influences of habit and custom, as well as from the extreme "narrowness of im-

<sup>2</sup> W. F. Foster and W. Catchings, *Profits* (Boston, Houghton Mifflin Company, 1925), pp. 284-285.

agination" which characterizes consumption. This conservatism of consumption is not shared by the production side of the economic system. Technological progress and business initiative (bent on making profits) both result in a rapidly rising level of productivity. This crucial difference in the characteristics of production and consumption leads to overproduction (or, if you like, underconsumption).

*The Unequal Distribution of the National Income.* Even more important than the conservatism of patterns of consumption is the extreme inequality of income distribution, which makes for a very low average propensity to consume. This is the principal reason for the lag of consumption behind production. A very large proportion of the national income tends to fall into the hands of a comparatively small part of the total population. These high-income classes always have large surpluses of income left over after completely satisfying their economic desires. (The desires of the great bulk of the population cannot be satisfied by the expenditure of *all* their limited incomes.) These surpluses are automatically saved and invested. In fact, most of the individual saving of our society, responsible for a great part of our capital accumulation, finds its origin in the automatic saving of the rich. Thus, saving leads to an increase in the stock of capital equipment, and ultimately to an increased outflow of consumer goods. But because the rich continue to save a large part of the unequally distributed income, consumer expenditures are always insufficient to take the increased volume of goods off the market at profitable prices. Prices, therefore, must fall, usually below costs of production. The marginal efficiency of capital declines, production and investment are curtailed, and a slump in business activity follows.

*The Wage Lag.* This situation is aggravated by the persistent tendency of wages to lag behind rising prices during periods of business revival. The wage lag acts simply to widen profit margins and to increase the proportion of total real income going to the employer and capitalist classes. Even though wages are rising in the absolute sense, they rise at a slower rate than does total national income, and are therefore able to purchase only a *declining* share of total national output. This development toward a more unequal

distribution of the real national income which characterizes every upswing means that the automatic saving of the high income groups is given still further upward impetus. The propensity to consume is still further reduced, with the consequences described above. Furthermore, the effects on the marginal efficiency of capital of the fall in prices (which sets in once the glut of consumer goods manifests itself) are accentuated by the high costs of production which develop as wages finally begin to catch up with prices.

Hobson emphasizes, however, that the removal of the wage lag still would not absorb the surplus incomes of the high income groups. These incomes arise from the normal differential rents, profits and interest incomes. Even without the wage lag the distribution of each *increment* in the national income would follow the same basic institutional pattern of extreme inequality, and would result in high rates of savings. In other words, although removal of the wage lag would tend to raise the propensity to consume somewhat, the latter would still be too low.

### *Some Classical Objections to Hobson's Thesis*

It might prove worth while at this point to devote a few paragraphs to some of the objections which might be raised to Hobson's analysis, and which he himself poses and attempts to answer.

*Oversaving.* Implicit in Hobson's emphasis on the unequal distribution of income is, of course, the suggestion of a much more egalitarian distribution of the national income. To this proposal the objection has been raised that *undersaving* would result and would lead to both a shortage of capital equipment and an inability to expand this capital enough to take care of even the normal requirements of a growing economy. In reply, Hobson carefully points out that he is not opposed to saving as such. A certain amount of saving is necessary "to realize the enlargements and improvements of the machinery of production that are required to furnish a larger output of commodities for a higher living standard or a growing population."<sup>4</sup> In a non-stationary economy, one which is characterized by progress in technological knowledge together with a growing

<sup>4</sup> J. A. Hobson, *The Economics of Unemployment* (London, George Allen & Unwin, Ltd., 1922), p. 39.



population, whose standards of living undergo gradual secular advances, a certain amount of saving is necessary. For these growth factors require increasing quantities of capital goods if they are to take effect, and (at least in a fully employed economy) such increases in the stock of capital can be forthcoming only if there is a "certain amount" of saving. (Here Hobson indicates the importance of what we have called autonomous investment as an outlet for current savings.) But, says Hobson, without analyzing the reasons why, autonomous (growth) investment outlets are not limitless. And because this is so, it is possible for society to *oversave*, that is, to save a disproportionately large amount of its current income, relative to the portion of the latter it devotes to consumption.

In the use of current income there must exist, at any time, an economically *right proportion* between expenditure in withdrawing commodities from the retail shops for consumption, and expenditure on maintaining and enlarging the plant and materials functioning in each stage of production. . . . Saving and investment . . . are only economically valid on condition that enlarged production is followed by a proportionately enlarged consumption.<sup>4</sup>

Hobson goes on to assert that his proposal for distributing the income more equally need not entail an *absolute* decline in the level of savings. If equalization of incomes increased the demand for consumer goods and hence kept production going more fully and quickly, there would be an increase in real national income as a result of the fuller utilization of capital and labor. Thus even though a smaller percentage of the national income were saved, the greater size of the base might actually enable the absolute rate of saving to rise.

*The Interest Rate and Prices.* Hobson poses two very fundamental objections to his own analysis, which were long raised by classical economists. The classicists asserted that oversaving and overproduction would be checked automatically, first by a decline

<sup>4</sup> *Ibid.*, p. 38. In the last sentence of this quotation, Hobson reveals his failure to incorporate systematically the precise role of autonomous investment in the determination of national income and its fluctuations. "Proportionately enlarged consumption," which implies a rise in the position of the consumption function, is necessary only in the event of a decline in autonomous investment outlets.

in the rate of interest, and second by falling prices. Classical economists have long conceived of an equilibrium rate of interest, that is, one which always (automatically) maintained equality between the supply of and the demand for savings. Any tendency for the supply of savings to outrun the demand would immediately cause the interest rate to decline. This fall in the rate of interest would reduce the incentive to save because of the lower rate of return on loans; but, at the same time, it would stimulate the demand for savings (as the lower rate of interest makes borrowing possible for investment projects whose marginal efficiency of capital heretofore had been too low relative to the rate of interest). The interest rate would continue to fall as long as any tendency toward oversaving existed, until finally the supply of and the demand for savings would be brought back into equality. This movement, too, would have the effect of reducing the volume of production (supply) at the same time that it served to increase the demand for goods, until supply and demand were once more equated.

Hobson's discussion of the relationship of savings to the rate of interest is, for the most part, a masterpiece of brilliance and insight. Written in 1922, it might well have been written in 1950. While a decline in the rate of interest may reduce the rate of supply of new capital goods, this effect is very feeble and quite slow. In the first place, the new capital which results from the investment of current savings is only a small fraction of the total quantity of capital goods used in production,

percentage of the total (capital) in use, and a check that operates not . . . and the efficacy of a falling interest rate in checking its oversupply is proportionately feeble. . . . A year's saving furnishes but a small on the whole, but only on the new supply, cannot be expected to be a speedy or effective one.<sup>5</sup>

There is a second reason for the inefficacy of the interest rate as a preventive of gluts. The rate of interest is not an important regu-

<sup>5</sup> *Ibid.*, p. 51. Hobson's analysis at this point is not too well taken. The essence of a downswing, as we have noted many times, is that *current* savings tend to outrun current investment. If reductions in the rate of interest could maintain equality between current savings and investment (at full employment, of course), major depressions would be averted, in spite of the fact that current savings comprise only a fraction of the capital in use.

lator of the volume of savings. The great bulk of current saving is done, as we have seen, *automatically* and irrespective of the going rate of interest, by the high income brackets. Furthermore, that part of saving which is the product of conscious planning is likely to be stimulated by the lower rate of interest. People who desire a fixed income at some future time must save more to compensate for the decline in the rate of interest. This is particularly true of institutional types of saving. It is commonplace experience, for example, that insurance companies have raised their premiums on annuities as the rate of interest has fallen.

Hobson very acutely adds that a fall in the rate of interest is often accompanied by a fall in national income from the declining level of business activity. It is a fall in the latter which will most affect the rate of saving. Because a fall in interest rates and national income often go together, however, many people make the error of ascribing the reduced level of savings (the concomitant of the lower level of income) to the reduction in the rate of interest.

The second check on overproduction, according to classical doctrine, would be the effect of falling prices as a stimulus to demand. This check is also defective. In the first place, a steady increase has occurred in the monopolistic concentration of production. Monopolistic concerns traditionally respond to declines in demand, not by maintaining output and reducing prices, but rather by curtailing production and maintaining prices. Such actions, in themselves, generate the levels of unemployment and low output which are characteristic of business depressions.

Furthermore, the innate conservatism of consumption, mentioned earlier, limits the stimulating effect of falling prices on demand. If people are more or less settled on some over-all level of consumption, and if they can also maintain their level of money incomes, the fall in prices will enable them to purchase the same quantities with smaller dollar outlays. The result will be *increased* savings." Falling prices will have their effects, but the effects will not be those looked for by the classical economists. Declining prices and the accompanying unwanted growth of inventories will

<sup>4</sup> An even stronger case may be made out for the ineffectiveness of price declines. It is always necessary to differentiate clearly the situation of *falling*

finally cause a fall in production, investment, employment, and, therefore, national income. The lower level of employment and national income will lead to a reduction in the volume of saving. The shrinking or shrunken money incomes will then be absorbed for the most part in maintaining the accustomed standards of living. In brief, Hobson is saying that during depressions, saving is reduced more than is expenditure on consumption.<sup>7</sup> There ensues a period of undersaving, during which stocks of goods are liquidated and equipment is not replaced. Finally, after a period of great waste, idleness, and suffering, the glut on the market is overcome, and the process of revival begins."

### CRITICAL EVALUATION

We shall devote this section to a critical analysis of the theory of Foster and Catchings and to that of Hobson, because the present writer believes that there may be a strong element of truth in an

prices from that of *fallen* prices. Prices which have already fallen, and have *ceased* falling, may have some stimulating effect on demand. Prices which are in the *process* of falling are likely to induce *hoarding*, as people curtail their expenditures in the expectations of being able to spend their money at a later time when its purchasing power is greatly enhanced.

<sup>7</sup> This is to say that the marginal propensity to consume is less than unity during the downswing as well as the upswing.

At this point, it might be worth while to discuss briefly the Marxian underconsumption theory of the business cycle, mainly because of the obvious influence it has exerted on thought. It should be noted, first of all, that there are really two types of business-cycle theories espoused by Marx in *Capital*: an underconsumption theory and a type of long-run overinvestment or stagnation theory. The latter is discussed briefly in the chapter dealing with the analysis of J. M. Keynes. See Chapter 4, p. 159, n. 21.

Marx' underconsumption theory is very similar to that of Hobson's. It contains, however, a very much stronger class bias. Briefly, the long-run value of goods is conceived to derive from the (socially necessary) amount of labor time spent on producing them. Labor, however, is paid only a *subsistence* wage, rather than the full value of its product. The difference between these two sums (that is, *the full value of the product of labor minus the subsistence wage*) accrues to the capitalist class in the form of *surplus value*. The capitalist class, being unable to spend all this surplus value on consumption, proceeds to save and invest the bulk of it in new capital equipment. The result is a continuing expansion in the rate of consumer goods production. Because the bulk of the income continues to accrue to the capitalist class, which continues to save the bulk of it, there develops a deficiency of consumer purchasing power. A glut on the market for consumer goods is the inevitable result, with the consequences described under the discussion of Hobson.

underconsumption approach to business-cycle analysis. We shall conclude this section with an attempt to bring together what seem to be the elements of truth in these theories in a more systematic and rigorous fashion than has yet been done.

### *Foster and Catchings*

As Foster and Catchings themselves admit, initially acts of saving (which lead to investment) leave the equilibrium of the system undisturbed. Workers in the capital goods industries spend on consumption the current savings which finance the construction of the new capital. Since the production of consumer goods is as yet unchanged, the total monetary demand and the total supply of goods are unchanged; thus the statement that the equilibrium of the system is undisturbed, in the first instance, by the initial acts of saving and investment.

*Increased Production Not Necessarily Deflationary.* It is true, however, that once the new capital equipment is created, it will increase productivity, so that there will be a spurt in the supply of consumer goods. In the face of an unchanged supply of money in circulation, i.e., an unchanged level of total monetary demand, prices must fall. This need not necessarily occasion concern, however. The new capital equipment is likely not only to increase output, but also to bring about a fall in the costs of production. More capital equipment means increasingly roundabout methods of production. And, as we know, these roundabout methods result in economies of production which lower physical costs of production. Moreover, if the rate of saving is even, and Foster and Catchings have not posited anything else, we have a right to expect advances in technology to place a further downward pressure on costs.

*Expansion of the Money Supply.* Furthermore, the supply of money may increase (and thus total monetary demand) sufficiently to offset the increased supply of goods, and hence prevent a decline in the level of prices. Foster and Catchings specifically deny this latter possibility. Their reasoning along these lines was illustrated with the use of Table 10 earlier in this chapter. This table was adapted from one of theirs, and it can easily be demonstrated that their reasoning is exceedingly specious.

Referring to Table 10, Foster and Catchings contend that in the third year the price level must fall below that of Year II, unless bank credit is expanded at an *accelerated* rate. In the first place, it should be noted that although output is shown to increase in Year III over that of Year II, the increase is an arithmetical progression rather than a geometrical one. Thus in spite of the large profits earned in Year II, the *rate* of increase of production actually declines in Year III. More important as a defect in their reasoning, however, is their apparent assumption that the dividends paid out by corporations remain unchanged despite the increase in corporate profits. Such an assumption is rather spurious, so let us change it: We may do so by keeping the same relationship between dividends and wages that the authors themselves originally posit, namely, a one to ten ratio. In this case the 10 per cent increase in wages is accompanied by a proportionate 10 per cent increase in dividends and receipts, both in Year II and in Year III.<sup>9</sup> The results of these changes are shown below in Table 11. It is to be seen that the *rates*

**Table 11 Money and Production**

|                                      | Year I    | Year II   | Year III  |
|--------------------------------------|-----------|-----------|-----------|
| Output (units of goods)              | 1,000,000 | 1,100,000 | 1,210,000 |
| Sales (units of goods)               | 1,000,000 | 1,000,000 | 1,100,000 |
| Receipts (dollars)                   | 1,000,000 | 1,100,000 | 1,210,000 |
| Wages paid (dollars)                 | 900,000   | 990,000   | 1,089,000 |
| Dividends (dollars)                  | 100,000   | 110,000   | 121,000   |
| Money stock at end of year (dollars) | 900,000   | 990,000   | 1,089,000 |
| Price level                          | 100       | 110       | 110       |

of increase in the money supply, output, wages, dividends, and receipts are all of the uniform figure of 10 per cent, as we proceed through Years I, II, and III. With these (much more realistic) assumptions, it is to be seen that the price level of Year III does not fall below that of Year II, but rather remains *constant*. Thus we may deny the assertion of Foster and Catchings that bank credit must expand at an accelerated rate annually if a fall in the price level is to be averted. Their conclusion that "the higher price level which results from an increase in the volume of money is increased

<sup>9</sup> Receipts are also assumed to rise by 10 per cent on the assumption that both the workers and the stockholders spend all their increases in incomes on the products of the corporations.

at an accelerating rate”<sup>10</sup> is without foundation. A *constant* rate of increase in the money supply may be sufficient to keep the price level from falling.

*Money, Prices, and the Level of Employment.* Foster and Catchings assume further that every expansion of bank credit used for productive purposes will result in almost proportionate increases in output. By this time the reader should be aware that the broad relation between national *money* income and national *real* income is primarily a function of the level of employment. During the initial phases of the upswing, large-scale unemployment usually prevails. We may, therefore, expect the expenditure of bank credit in the productive processes to result in a rising level of real national product. The expansion of bank credit means a higher level of national income, and therefore, a higher level of total monetary demand. This greater level of demand may be expected to act as a stimulus to production. An increase in the total level of production is made possible by the utilization of unemployed resources. However, as the community begins to approach full employment, the continued expansion of bank credit will be reflected more and more in rising prices and less and less in rising output. Hence we have additional grounds for denying the Foster and Catchings assertion that bank credit must expand at an increasing rate if the everexpanding rate of output is not to result in a price fall. Output does not continue to expand evenly throughout the upswing.

### *J. A. Hobson*

The defects of Hobson's analysis result primarily from errors of omission rather than from errors of commission. As one writer has said, if Hobson had analyzed the determinants of investment with the acuteness with which he described the factors influencing the savings function, he would have anticipated recent development in our knowledge of national income determination by twenty years. This statement puts the matter a little strongly, perhaps, but it does contain a large element of truth. The reader need only compare the discussion of the determinants of the propensity to consume in Chapter 2 with Hobson's discussion in this chapter. Yet from the

<sup>10</sup> *Profits*, p. 310.

standpoint of business-cycle theory, his failure to analyze the determinants of investment is not his only weakness. With the exception of his discussion of the wage lag, his analysis appears to suffer from a dearth of cyclical factors. The extreme inequality in the distribution of the national income, which represents the core of his thesis, is primarily a *secular* phenomenon, but it may be of possible use in a cyclical explanation. We shall, in fact, attempt to point out a possible method of doing so (in a more rigorous fashion than that attempted by Hobson) in our attempts to construct what seem to be the prerequisites of an underconsumption theory.

*The "Right Ratio."* On another point, Hobson's analysis seems to suffer from a degree of circular reasoning. He argues that at any time there is a "right ratio" (a correct proportion) between the sums of money spent on the production of capital goods and those spent on the production of consumer goods. When relatively too much is spent on the production of capital goods the ratio or proportion between capital and consumer goods is "wrong." This wrong ratio is the result of the oversaving stemming from inequalities in the distribution of national income. Oversaving results in the creation of more capital goods than are capable of being utilized in supplying consumption.

It is to be observed that this concept of a "right ratio" is circular in its reasoning, for it seems to say that a given ratio is wrong if the crisis occurs, but it would have been right if the crisis had not occurred. It is necessary that independent means of judging this ratio should exist. Furthermore, if the ratio between capital and consumer goods is the root of the cycle, there must be changes of a *cyclical* nature in the value of the ratio. Making the changes in the ratio a function of a phenomenon which displays a distinctly *secular* constancy, however, is somewhat illogical. It is necessary to establish a tendency for the distribution of income to become increasingly unequal during the upswing of a cycle and then less so during the downswing if the changes in the ratio of capital to consumer goods production are to assume cyclical characteristics. Hobson gives some indication of this in his discussion of wage lags, which do make for increasing inequality in the distribution of income during the upswing.



Earlier in this chapter we reviewed Hobson's attack on the position of the classical economists with respect to an underconsumption theory of the business cycle.<sup>11</sup> A few additional remarks are worth while at this juncture, which will serve to elaborate on his criticism and tighten his case against the classicists.

*The Nature of the Inducement to Invest.* While Hobson's analysis of savings is a classic, his analysis of investment leaves much to be desired. The same is true of Foster and Catchings. These writers leave the impression either that all savings are deflationary or that only a limited amount is capable of being absorbed. In the latter case no criteria are given, except the rather tautological one of some "right proportion." It is true that Hobson did devote some attention to the role of the long run factors of growth in providing autonomous investment outlets for savings. In doing so, he did make a noteworthy advance in the sophistication of his analysis beyond that of his predecessors or contemporaries. But the exact determinants of autonomous investment and the precise role of the latter in the determination of national income and its fluctuations are unsystematically touched upon. This is evident in his insistence that (net) "saving (and investment) should be directly proportionate to the rising volume of consumption." Such remarks reveal a degree of vagueness and uncertainty about the exact nature of investment in income determination and fluctuations. While admitting that savings will not be deflationary when invested, he appears to have believed that such investments will lead to underconsumption and, therefore, depression.

Because current savings are never deflationary as long as they are invested, it is necessary, once again, to distinguish between the categories of inducements to invest. Following the pattern we have maintained throughout this book, we may view the inducements to invest as (1) a function of demand derived from consumer goods, and (2) a function of outlets arising out of the autonomous factors of growth, including population growth, technological progress, and territorial expansion.<sup>12</sup>

<sup>11</sup> Cf. pp. 258-261, *supra*.

<sup>12</sup> This dichotomy of investment stimuli has been discussed at length in Chapter 3, pp. 101-104.

If there is sufficient investment opportunity arising from the autonomous growth factors, savings will not necessarily be deflationary, even though they cause a shrinkage in the current demand for consumer goods. Part of the income stream (emanating from the production processes) will be paid out as costs of production of capital goods, and part will be paid out as costs of production of consumer goods. Hence only part of consumer incomes need be spent on consumer goods to enable producers of these goods to produce them profitably. In fact, it is *necessary* that part of the income stream continue to be saved, so that the new investment projects can be brought to completion. However, if there exists a dearth of investment opportunities deriving from the growth factors, a rise in the propensity to save or increased savings resulting from a diminishing slope of the savings function will in all likelihood be deflationary, for they will not be invested.<sup>13</sup> A decline in total monetary demand will take place as savings out of current income are hoarded or are used for the repayment of bank debt.

### *The Interest Rate Again*

The classical economists never really conceived of a dearth of investment opportunities in any absolute sense. Such a dearth could only exist in relation to a given rate of interest. If savings tended to outrun investment, the rate of interest would fall, making feasible heretofore extramarginal investment opportunities. At the same time the lower interest rate would reduce the incentive to save. Thus the interest rate was conceived to be the factor which maintained equality between savings and investment.<sup>14</sup>

Some defects in the classical reasoning have already been

<sup>13</sup> Of course, even a constant rate of saving will be deflationary in the face of a decline in investment opportunities.

<sup>14</sup> It might be argued that the classicists were aware of the importance of the level of income as a determinant of investment. However, because they could never conceive of an equilibrium level of income at less than full employment (or at best, considered deviations from such an equilibrium very transitory deviations from the norm, and hence not worthy of detailed consideration), the level of income and employment were always parameters in their conceptual systems of analysis. Thus the role of fluctuations in the level of national income as the equilibrating mechanism between savings and investment is nowhere to be found in the business-cycle discussions of the classicists, to the extent that these discussions are to be found in the literature.

pointed out, both in Chapter 2 and in our discussion of Hobson's theory. In the first place, the fluctuating national income is a much more important influence on the rate of saving than is the rate of interest. The extreme inequality in the distribution of the national income (which has been a matter of historical record for many hundreds of years) has traditionally meant that the bulk of society's saving has been done more or less automatically by the relatively few in the high income brackets. Furthermore, people who save (in the various forms of insurance, etc.) for such purposes as old-age retirement, illness, accidents, or other emergencies, usually aim at some fixed sum. Hence their savings respond in an *inverse* manner to changes in the rate of interest. For this reason, we find ourselves in the rather dubious situation of admitting that the rate of interest may exert some influence on the rate of saving, for the whole nation, but exactly in which direction it is difficult to say.

*The Incompleteness of the Classical Analysis.* Moreover, the total supply of funds available for investment consists only in part of savings out of current income. The classical economists proceeded under the assumption that the supply schedule of savings and the supply schedule of loanable funds (i.e., funds available for investment purposes) were one and the same thing. But the supply of loanable funds may be less than the volume of current savings by the amount of net hoarding and/or repayment of bank debt; or the supply of loanable funds may exceed the supply of current savings by the amount of dishoarding and/or current borrowing from commercial banks. The interest rate, in fact, then, is determined by, and in turn influences, not only the supply of current savings but the total supply of loanable funds, of which savings out of current income are only a portion. And the interest rate is raised when savings are hoarded or used for the repayment of commercial bank debt; similarly, the interest rate is reduced in the face of dishoarding or borrowing from commercial banks. These points are illustrated by Figure 31.

The curve *DD* represents the demand curve for loanable funds when the economy is operating at full employment. This curve may be said to be based on the marginal efficiency capital at full employment. *SS* is the supply schedule of savings forthcoming at the level

of income generated by the *fully employed* resources. If the curve  $SS$  were the supply schedule of loanable funds (that is, there is no net hoarding or dishoarding or net creation or contraction of bank credit), the rate of interest would be  $Oi$ , and the amounts of savings

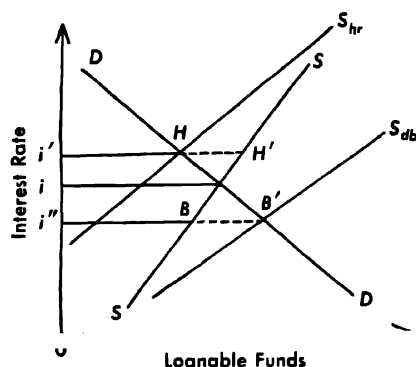


Figure 31. *Loanable Funds and the Interest rate*

and investment would be equal at that rate. If hoarding or repayment of bank debt take place, the curve  $SS$  shifts upward to the left, to some position  $S_{hr}$ , indicating that the supply of loanable funds is less than the supply of savings by the amount of hoarding or repayment of bank debt. The curve  $S_{hr}$  is seen to converge upon  $SS$  as the interest rises, indicating that the higher the rate of interest, the less hoarding, that is, at any given level of income more savings will be offered at higher than at lower rates of interest. The rate of interest will rise to  $Oi'$ ; saving exceeds investment by the horizontal distance between the curves  $DD$  and  $SS$  at the interest rate  $Oi'$  ( $HH'$ ). If dishoarding or borrowing from commercial banks occur, the supply schedule of loanable funds lies to the lower right of the curve  $SS$ , as indicated by the curve  $S_{db}$ . The curve  $S_{db}$  is seen to diverge from  $SS$  as the interest rate rises, showing that dishoarding increases as the rate of interest gets higher. The rate of interest will fall to the value  $Oi''$ ; the amount by which investment exceeds saving is given by the horizontal distance between the curves  $DD$  and  $SS$  at the interest rate  $Oi''$  ( $BB'$ ).

The reader is aware, however, that the national income also

fluctuates when the amount spent on investment differs from the sums currently being saved. When savings exceed investment, the national income falls. Referring once again to Figure 31, we observe this to be the case when the supply schedule of loanable funds is *Shr*. In the diagram, however, the demand schedule for loanable funds was taken as a given, or fixed, datum. As a matter of fact the demand schedule is also likely to fall following the initial decline in national income, for the resulting lower level of total monetary demand is likely to cause the marginal efficiency of capital to decline. In addition, the supply schedule of savings was assumed to be a function of a *given* national income. With the fall in national income, the supply curve of savings will be further reduced. When a supply curve consisting only of current savings appears (*i.e.*, there is no further hoarding or repayment of bank debt), the national income will cease falling.

Similarly, when investment exceeds savings, the national income rises. This is the case when the supply schedule of loanable funds in Figure 31 is *Sdb*. In this case the demand for loanable funds will rise with the increase in the marginal efficiency of capital, which results from the higher level of monetary demand generated by the rising national income. The savings schedule will also rise, as a greater volume of savings is forthcoming at the higher levels of income. In this case, the national income will stop rising when a supply schedule of loanable funds consisting only of current savings intersects the *DD* curve.

From the above analysis the reader should recognize that while the rate of interest might effect an equilibrium between the demand for and the supply of savings, *it can do so at any level of employment*. There is nothing ideal in any ~~welfare~~ *welfare* sense about an equilibrium position. Equilibrium between ~~savings~~ *savings* and investment can be effected with large unemployment prevailing throughout the economy, as well as full employment. This the classical economists, with their oversimplified system of analysis, did not see. Their analysis always assumed the level of income and employment to be given. And the level of income which was assumed was always that level necessary to provide full employment of a nation's resources. Thus, by this assumption of equilibrium with full employment, they

ruled out from possible examination some of the most interesting aspects of the problem of fluctuations in national income and employment.

*The Inflexibility of the Interest Rate.* A further shortcoming of classical interest theory is that the long period equilibrium situation, in terms of which their analysis runs, is confused with the short period adjustments to this equilibrium. But it is the short period disequilibrium which may constitute the maladjustments which are at the root of the business cycle. The rate of interest, the classicists' chief mechanism for making adjustment in the short-period disequilibrium situations (and thus for effecting the long-run equilibrium), is not the flexible price which classical economists have envisaged. Interest rates during periods of downswing tend to decline rather slowly for manifold reasons: The large number of defaults on outstanding securities, and doubts about the profitability of existing and new enterprises, especially of small (and thus financially weak) ones, both serve to create a sense of great insecurity in the minds of creditors. The result is to increase the estimated risk of loss on loaned funds in the minds of potential lenders. This, in turn, leads to a contraction of loanable funds in the capital market. These potential lenders consist of financial institutions (including commercial banks) as well as of individual lenders. Moreover, the decline in national income, which usually accompanies depressed periods, means that the volume of current savings will fall off, thereby further reducing the supply of loanable funds. Finally, as the rates of interest fall below the levels to which the community has grown accustomed in the previous prosperity period, the feeling will grow that the new level is only temporary—the rates will shortly rise again to their former levels. The possibility of a rise in rates greatly increases the danger of a decline in security prices and other capital values. The demand for funds to hold in the form of idle cash balances (*i.e.*, hoarding) will therefore increase, with the consequence that the supply of loanable funds is still further reduced. Thus although the decline in the *demand* for loanable funds exerts a downward pressure on the interest rate, the aforementioned factors also serve to reduce the *supply* of loanable funds and hence lessen the fall in the rate of interest. In other words, be-

cause of these institutional rigidities, the marginal efficiency of capital exhibits a distinct tendency to fall much farther than the rate of interest, so that investment declines sharply.

*The Interest Rate as a Cost of Production.* Even if the interest rate were flexible, however, an increase in the *rate* of savings will probably cause the prices of consumer goods to decline at once, while the costs of producing them are not likely to be affected materially by the lower rate of interest in the short run. The portion of *direct* costs of production of consumer goods which are immediately affected by the lower interest rate is small, primarily because of the ordinarily frequent turnover of working capital. Thus the fall in prices is likely to be more rapid than any fall in costs in the immediate future. Moreover, this situation will last until the completion of new capital goods effects lower costs and brings prices and cost into an equilibrium relationship with each other.

But this equilibrium is a long-run adjustment, in which the reduction of costs *by investment has been allowed for*. Hence it follows that an increase in saving involves net losses in the production of consumer goods before these reductions in costs are realized, however rapidly the rate of interest may fall.<sup>15</sup>

The losses in the production of consumer goods may lead to a decline in the demand for new capital goods. It has been emphasized that the demand for investment goods is derived from the demand for current consumer goods production (derived demand) and from the autonomous factors of growth. Hence, unless the decline in the *derived* demand for capital goods is sufficiently offset by the investment demand arising from one or more of the autonomous growth elements, the rate of investment is very likely to decline. Savings will tend to outrun investment, the national income will fall, and a depression will be at hand.

*The Interest Rate as a Rate of Discount.* A comprehensive discussion of the reasons why reductions in the interest rate are likely to be confronted with an inelastic demand schedule for loanable funds has been carried through in Chapter 4. It is worth while

<sup>15</sup> E. F. M. Durbin, *Purchasing Power and Trade Depression* (London, Jonathan Cape, Ltd., 1934), pp. 91-92. Quoted with the permission of Mrs. E. F. M. Durbin.

reiterating at this point, however, the importance of the element of risk in determining the effect of changes in interest rates on investment decisions. We have indicated that risk and uncertainty may be incorporated into the analysis by treating the (market) discount rate to include a component for risk as well as component for the rate of interest. From this it follows that the more important the risk component, the less effect on the total discount rate will any given change in the interest rate have. As a matter of fact, we may also expect the risk component to rise in value during periods of slumping business activity in consequence of the increasing business pessimism that appears during such times. In this case, reductions in interest rates may simply act to offset, more or less, rises in the value of the risk component of the discount rate, so that in the end the *total* market discount rate has remained more or less unchanged. All this happens of course in the face of a declining schedule of the marginal efficiency of capital, the product of declining current sales.

Even if the risk component of the discount rate did not rise during depressions (contrary to fact), however, the mere existence of a risk component more or less equal in value to the interest component will seriously diminish the effects of a given reduction in the rate of interest. Suppose investment were established at a level where the marginal efficiency of capital and the market discount rate (including a risk component as well as an interest component) were equal at 6 per cent. Assume also that the risk and interest components each consisted of 3 per cent. Now suppose the marginal efficiency of capital fell to 2 per cent. Under these circumstances, even if the interest rate could be reduced to zero (an impossibility under existing institutional practices), the discount rate would still remain above the marginal efficiency of capital (for given levels of investment) and the rate of investment would decline. It is clear that the larger the risk component as a portion of the total market discount rate, the more difficult it is to effect a reduction in the latter proportionate to a given decline in the marginal efficiency of capital through a reduction in the interest rate.



*The Role of Saving in the Economic Process*

At this point it will be worth while to review the function of savings in an economy (any economy, but primarily one characterized by capitalistic institutions). In the first place it is necessary to differentiate clearly between the role of saving in a full employment economy and its role in an economy characterized by widespread underemployment of resources. In the former, savings perform a function which is indispensable to progress; but in the case of an economy operating at less than full employment, any increase in the rate of savings can only have a very deleterious effect on the level of income and employment.

When an economy is operating at full employment, the only way in which it can expand its plant, equipment, and inventories is by having net savings out of current income. Savings in a full-employment economy release factors of production from consumer goods industries for use in production of capital. Since all factors are fully employed (by definition), the only way production can be expanded in one group of industries (in this case those producing capital goods) is to transfer factors (resources) from another group of industries (in this case, those producing consumer goods). Savings, by reducing the demand for consumer goods, make possible this sequence of events. When we confine our attention to a full employment economy, savings are found essential to the assurance of a sufficient volume of investment. Our (classical) assumption of continued full employment implies the adequacy of investment *outlets*.

When an economy is operating at less than full employment, however, the situation is altogether different. By definition, an underemployed economy is characterized by a rate of investment which is insufficient to absorb the savings that would be generated by a full employment level of national income. Any increase in the rate of saving can only mean superimposing a disastrous deflationary pressure on an already depressed economy. Since the new savings cannot be invested, total monetary demand will diminish further. The decline in the demand for consumer goods, not offset by an expansion of investment demand emanating from the au-

onomous growth factors, will lower the marginal efficiency of capital in the consumer good industries, so that the rate of investment will decline even more, and the economy will be further depressed. The doctrine of thrift, heretofore considered to be extremely virtuous, actually is little short of vicious during periods of depression, when considered from the viewpoint of the whole society.

### *The Prerequisites of an Underconsumption Theory of the Business Cycle*

It is now time to determine what the essential elements of an underconsumption theory must be, if it is to contain the truth ascribed to it by its authors.<sup>16</sup> The skeleton of an underconsumption theory is really quite simple.

If it can be proved that during the process of expansion certain forces are generated which cause the *Rate of Saving* to increase, then the process of expansion will end in a crisis characterized by the appearance of losses in the production of consumption goods; while if it can be proved that during the period of contraction the *rate of saving* decreases, so that consumer demand increases sufficiently to wipe out the losses being incurred in the consumer goods industries, and, in fact turn them into profits, then recovery will be induced.<sup>17</sup>

<sup>16</sup> It has been asserted by some that any underconsumption approach to the explanation of business cycles is clearly absurd, because of the well-known fact that consumption and the level of consumer goods production both show remarkable stability during the course of the cycle. This empirical fact is far from conclusive, however. The acceleration principle attests that a decrease in the *rate of increase* in the demand for consumer goods is all that is necessary to precipitate a downturn in the demand for capital goods. Furthermore, the fact that the ratio of consumption to total national income shows remarkable stability may be the very thing that causes the contraction in the demand for capital goods in the consumer goods industries. For if the completion of investment processes means an increase in the *rate of flow* in consumer goods production while the *rate of spending* on consumer goods remains unchanged, producers of these goods are going to find their inventories involuntarily piling up on them. Even though they contract their output but little, as the statistics seem to indicate, they undoubtedly will curtail their orders for new equipment. In the absence of offsetting inducements to invest from the dynamic growth factors, this may provide the necessary contraction in investment to initiate the decline in national income characteristic of depressions.

<sup>17</sup> E. F. M. Durbin, *Purchasing Power and Trade Depression* (London, Jonathon Cape, Ltd., 1934), pp. 95-96. Quoted with the permission of Mrs. E. F. M. Durbin. It is to be noted that these statements take the inducements to invest deriving from the growth factors as constants.

### *The Rate of Saving and the Business Cycle*

The mechanism through which these changes in the rate of saving may be brought about has already been suggested in the discussion of the theories of J. A. Hobson. It is a well-known fact that during periods of business expansion wages tend to lag behind rising prices. The resulting higher profits mean a redistribution of the national income in favor of individual enterprises, corporations and their stockholders, at the expense of wage earners. In general, this means a greater portion of the income going to the latter groups, whose propensities to save are higher than those of wage groups, with the result that the propensity to consume of the whole community is reduced (or the propensity to save, and thus the rate of saving, is increased). The same results may be obtained in the absence of a wage lag, however.

We have observed that either the marginal propensities to consume of all individuals or their average propensities to consume, or both, tend to fall temporarily once the national income carries disposable income beyond the standards of living to which households have previously grown accustomed. By drawing short run consumption functions which are curvilinear, increasing at decreasing rates, that is, we indicate that, in fact, the marginal and average propensities to consume of individuals do behave in this fashion and that the *rate* of consumption does decline.<sup>15</sup> However, as is

<sup>15</sup> Recently, certain economists have asserted that the propensity to consume is not curvilinear in shape, but rather should be drawn as a *straight* line with a slope of less than 45°. A straight line means that the slope of that line is constant. In terms of the propensity to consume, a straight line would mean that the marginal propensity to consume (which, as we have seen, is the slope of the propensity to consume) remains constant as the national income rises. However, as long as the slope of the propensity to consume is less than 45° (i.e., less than unity), the *average* propensity to consume (the ratio of *total* consumption to *total* income) will decline as the national income increases. The fact that more saving is done at higher levels of national income than at lower levels indicates that one of these possibilities is true, that is, that either the marginal propensity to consume declines (and thus the propensity to consume is curvilinear), or, at least, the average propensity to consume declines. It should be noted, however, whether the propensity to consume is drawn as linear or curvilinear in shape, as long as the slope in either case is less than one, the *rate* of saving (i.e., the ratio of *total* saving to *total* income) rises as the national income rises. While there may be reason to doubt whether this tendency (of the rate of saving to increase as national

pointed out in footnote 18, the rate of consumption (*i.e.*, the ratio of total consumption to total income or average propensity to consume) may fall, even with a *straight-line* consumption function. So long as the short run consumption function intersects a 45° line to the right of zero national income, the *average* propensity to consume must decline as the national income rises.

During the periods of contraction of business, we are able to say with the same assurance that the rate of saving meets the requirements imposed on it in the opening of this discussion. Thus, wages lag behind prices in the downswing also, and profit margins, therefore, contract. But it is also true that these periods of contraction are characterized by widespread unemployment. The incomes of wage earners are thus greatly reduced, and the threat of partial or total unemployment may cause them to curtail their rate of spending. Nevertheless, there are *a priori* grounds for believing that the *rate* of saving does get smaller as national income falls cyclically. The *a priori* reasoning is centered around the efforts households make to resist reductions in their living standards. Even faced with declining incomes and unemployment, families may be expected to prevent living standards from falling beyond a certain point. This is not to say that there is no retrenchment at all on the part of households during periods of cyclically declining income. But at some point, households will prefer to dig increasingly into savings or go into debt in an effort to avoid further reductions in consumption. The maintenance of consumption in the face of a declining income is synonymous with a rise in the rate of consumption (or a fall in the rate of saving). Moreover, all *statistical* studies of the consumption function show the average propensity to consume to rise when income falls cyclically.

### *A Suggestion for Empirical Study*

The exact movements of the rate of saving over the course of the cycle are worthy of empirical study. However, the rate of saving may take the form of a shift in the propensity to consume itself, or

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income rises) is a *secular* phenomenon, the statistics do seem to indicate that it is true in the *short* run. This is all an underconsumption theory needs, however, for the business cycle is essentially a short-run phenomenon.

else the form of a movement along a consumption function (either linear or curvilinear) which intersects a 45° line at a point to the right of zero national income, or both.

It is not too difficult to determine which of these factors is responsible for the change in the rate of savings. The consumption function, it will be recalled, was set up on the assumption that consumption varied with the level of national income. The empirical studies should attempt to determine how consumption reacts to changes in such other variables as the rate of interest, changes in the rate of change in national income, changes in the rate of investment, and other variables mentioned as *short-run* determinants of the propensity to consume in Chapter 2. If consumption (or saving) appears to change very little as these other variables change, it is safe to assume that changes in the rate of consumption occur as a result of movement along the propensity-to-consume curve. Such changes would arise either from differences in the marginal propensity to consume along a curvilinear consumption function or differences in the *average* propensity to consume, alone, along a linear function intersecting a 45° line to the right of zero national income. If consumption varies with one or more of the variables *other* than changes in national income, then we can say that the rate of savings changes as a consequence of shifts in the consumption function, as well as movements along the function itself.<sup>19</sup>

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<sup>19</sup> Studies of the type mentioned have been initiated by some economists. See J. S. Duesenberry, *Income, Saving and the Theory of Consumer Behavior* (Cambridge, Mass., Harvard University Press, 1949), Chapter V. Studies of this sort are also being carried on at the Consumer Survey Research Center, University of Michigan.

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## CHAPTER 9

### **SOME STRATEGIC FACTORS AND RELATIONSHIPS WHICH INFLUENCE THE GENERAL PATTERN OF CYCLICAL BEHAVIOR**

#### **THE ROLE OF AGRICULTURE IN THE BUSINESS CYCLE**

The analysis of the place of agriculture during the course of the business cycle may be approached from two points of view. One is that cycles in agriculture may induce repercussions on the business economy such as to set in motion the cumulative forces of expansion and contraction that we call the business cycle. While making no attempt to identify the periods of the business cycle with the periods of harvest or livestock cycles, this point of view takes agricultural cycles to be potential initiating or stimulating factors, along with such others as population growth, important technological innovations, a lowering of the interest rate, etc., all of which may stimulate a wave of new investment. This point of view may be said to be that of most present-day students of the business cycle.

In the past there has been a second point of view strongly held by some, who have attempted to link the period and origin of the business cycle with the period and origin of the cycles in agriculture. Theories falling within this second viewpoint generally run from some event in the solar system (like sun spots and the relative movements of the planets), to the effects of these solar events on weather conditions, to the influence on harvests, and from the latter to the business cycle at large.<sup>1</sup> However, the large body of evidence shows

<sup>1</sup> Foremost among the proponents of this viewpoint have been W. S. Jevons, who propounded a sunspot theory of the cycle: see his *Investigations in Currency and Finance*, 2d ed. (London, The Macmillan Company, 1909) (three

agriculture to have its own cycles, whose timing exhibits no distinct relationship to the general business cycle. At times harvest cycles have moved in the same direction as the business cycle, at other times they have moved in the opposite direction, and sometimes they have moved in a manner quite unrelated to the general business cycle. There is more or less general agreement that, particularly in countries predominantly industrial, the evidence is distinctly lacking for a case that would show similar periodicity between agricultural and business fluctuations, with the former leading the way. Even when proponents of such ideas offer high correlation values between agricultural and general business indexes their statistical methods are often open to question, as well as their so-called "causal" relationships.

It is evident that the present writer is not in sympathy with the second of these two points of view on the significance of agricultural cycles for the general business cycle. To deny the appropriateness of an agricultural theory of the business cycle (in the same sense that we have an underconsumption or overinvestment theory), however, is not to deny all importance of agricultural cycles for business-cycle analysis. Such a position "simply means that agriculture is not a regularly acting force, tending *typically* and *regularly* to help initiate recovery, or stimulate revival, or in any other way to play habitually the same role in a predominant number of cycles."<sup>2</sup> Agricultural factors at times undoubtedly affect the timing of various phases of business cycles and may contribute to the intensity and amplitude of any particular phase, and consequently, to the duration of the entire cycle. But to be a contributing influence is not necessarily to be a decisive factor among those which determine the character of any particular business cycle or business cycles in general. Let us turn now to an examination of the ways in which agri-

papers on "commercial crises"), and H. L. Moore, who developed a rainfall theory of the business cycle: see his *Generating Economic Cycles* (New York, The Macmillan Company, 1923). More recently, one writer has attempted to develop an agricultural theory of the business cycle on the basis of the relationship between agricultural and industrial price movements: see V. P. Timoshenko, *Role of Agricultural Fluctuations in the Business Cycle* (Ann Arbor, University of Michigan Press, 1930).

<sup>2</sup> J. M. Clark, *Strategic Factors in Business Cycles* (New York, National Bureau of Economic Research, 1934), p. 62. (*Italics supplied.*)



cultural fluctuations may exert an influence on the pattern of business cycles.

### *Agricultural Fluctuations as an Influence on the Pattern of Business Cycles*

There are two paths via which agricultural cycles may be expected to influence the course of business cycles. First, agricultural cycles will obviously affect those industrial sectors into whose products farm products enter as raw materials. Good harvests will usually mean cheap and plentiful raw materials, poor crops scarce and costly raw materials. Also affected by crop cycles will be those industries engaged in storage, transportation, and marketing of agricultural products: large crops stimulating activity in these industries and poor crops damping activity in these sectors. In these ways some positive correlation may be seen between cyclical movements in harvests and the marginal efficiency of capital in the industrial sectors of the economy, as a result of these *direct* effects on industrial users and handlers of farm products.

Secondly, fluctuations in harvests may be expected to affect the purchasing power, or total monetary demand, of the community at large. Do good harvests raise aggregate monetary demand sufficiently to raise the level of consumption and perhaps also stimulate new (induced) investment, and is the reverse true of bad harvests?

Before attempting to answer these questions, let us first examine the effects of crop cycles on industrial users and handlers of farm products. We shall then turn to an examination of the problems associated with the effects of harvest cycles on aggregate monetary demand.

### *Effects on Industries Using Agricultural Products*

Of the two determinants of national income—the propensity to consume and the rate of investment—it is clear that we should confine our analysis of the influence of crop cycles in the present case to the effects on investment activities. A large harvest is likely to lower the prices of the raw materials in relation to finished products. This will be all the more true in the (common) cases

where the demand for the agricultural products is price inelastic.<sup>3</sup> For those industries using agricultural raw materials, the resulting expansion of profit margins should provide some stimulus to the marginal efficiency of capital and investment. Similarly, industries which are engaged in the handling, transportation, and sales of agricultural products might be expected to increase their investment in expanded facilities to handle the increased volume of crops. In times of depression business activity, if, as is likely, the new investment is financed out of expanded bank credit or idle cash balances, a general stimulus to business activity is likely to ensue to some degree. On the other hand, if this increase in activity were to take place in time of full employment, when credit facilities were already being strained, an overinvestment type of crisis could result, of the kind envisioned by the Austrians.

However, there are strong reasons for believing that, with the exception of effects on what might be called the "storage industries" (to be discussed shortly), little investment in fixed equipment is likely to occur on the basis of one good harvest. One reason for this belief lies in the low ratio to total average costs that raw material costs ordinarily play, when one is careful to avoid duplicating raw material costs in estimating them for the economy as a whole.<sup>4</sup> This being the case, the decrease in raw material costs is not likely to increase the margin of profit sufficiently to warrant new investment. One writer, V. P. Timoshenko,<sup>5</sup> has asserted that the fall in agricultural prices relative to industrial prices always increases profit margins and, hence, business activity. But, in fact, during depressions, when farm prices are low relative to industrial prices, losses

<sup>3</sup> Inelasticity of demand for farm products is likely to arise because of the inelastic demand of consumers for these products or because of the usually inelastic demand on the part of industrial users of farm products. Consumer demand tends to be (price and income) inelastic because farm products are usually necessities or because, individually, agricultural commodities entail the expenditure of only comparatively small portions of total income. In the case of industrial users, demand is inelastic because raw materials are jointly demanded along with many other inputs, and usually comprise a rather small percentage of total costs.

<sup>4</sup> Such duplication appeared in the figures of H. L. Moore, *op. cit.*, when he estimated the proportion of raw material to total costs as 80 per cent by examining the gross product for all industries. The actual proportion is approximately 33½ per cent.

<sup>5</sup> *Op. cit.*

are usually being incurred, showing that the spread between raw material costs and selling price is not great enough, or that raw material costs are not important as a ratio to total average costs.<sup>6</sup>

There is even a stronger reason for doubting the significance of the increase in investment attributable to a good harvest. Let us grant, for the sake of argument, that low raw material prices do succeed in substantially increasing profit margins. But if this happens only on the basis of one harvest, then there is bound to be great uncertainty about the length of the period of low raw material prices. One good harvest, or even two, is likely to mean that low raw material prices will prevail for a comparatively short time. This means that the value of net revenue streams from new capital goods will be raised only in the near future. Distant revenue streams will not be affected at all. But the necessity of investing in durable capital equipment, which will yield revenue streams for some time into the future, makes it imperative that future as well as very near net revenue streams be raised; otherwise the stimulus to investment from the low raw material prices is considerably damped, if not negligible.

The same is true of industries which transport and otherwise handle agricultural products. None of these industries is going to expand its fixed equipment solely on the basis of one or two good harvests, with the imminent threat that more "normal" harvests will leave them with idle capacity. More likely, in the absence of assurances that the large harvests are indicative of a *trend*, these industries will simply use existing facilities more intensively, rather than make important outlays for new investment.

Some empirical testimony may be adduced to support the above beliefs. Food products industries, certainly among the most important users of agricultural raw materials, show very little in the

<sup>6</sup> This same writer, along with others, has inferred from the fact that a low ratio of agricultural to industrial prices has preceded most revivals in business activity that this low ratio must be in large part responsible for the revival. However, an equally, if not more, plausible conclusion is that agricultural prices are low relative to industrial ones *because* of the general business depression, and it is the contrary movement of agricultural production in response to price declines which accentuates the spread between industrial and agricultural prices. Certainly, in economies primarily industrialized, like the United States, the latter conclusion seems the more plausible.

way of cyclical fluctuations. What fluctuations do occur exhibit very little relation to the fluctuations in agriculture, which, as we indicated earlier, themselves exhibit no clear-cut relation to the general business cycle. These bits of evidence, while by no means conclusive, do indicate that the total effect of agricultural cycles on these branches of industries is probably negligible.

*An Important Exception to the Above Is Storage Activities*

There is a fairly important class of exceptions to the foregoing arguments, which Lord Keynes brought to light.<sup>7</sup> This class embraces what might be termed "storage activities of industries." Fluctuations in the quantity of *inventories*, including agricultural stocks, are among the most important causes of fluctuations in the rate of investment. The remainder of a large harvest which is only partly absorbed by industrial (and domestic) users into the manufacturing processes will be absorbed into the stocks or inventories of elevators, manufacturers and wholesalers. This building up of inventories constitutes an increase in the rate of investment. Since this investment in inventories will probably be financed out of cash balances or bank credit, farm incomes will be expanded without a corresponding contraction in expenditures elsewhere in the economy, so that there will be a net expansion in total monetary demand, as is the case of any investment project financed out of "inflationary" sources. This effect is not entirely offset, either, particularly in the longer period, by the decline in agricultural prices which may accompany the large harvest. Similarly, in the case of poor harvests, stocks will be drawn down to supply current consumption. Such an event constitutes an act of disinvestment in inventories, a decline in the rate of investment at large, unless offset by an increase in investment elsewhere in the economy. Of course, in the absence of such offsets, the decline in agricultural inventories has deflationary consequences (assuming, also, that there is not a rise in the consumption function).

In a later section in this chapter, we shall have occasion to note the role of fluctuations in inventories in bringing about minor breaks

<sup>7</sup> J. M. Keynes, *The General Theory of Employment Interest and Money* (New York, Harcourt, Brace and Company, 1936), pp. 329-332.

in the path of development of major business cycles. Inventory cycles have recently come to play an increasingly important role in the explanation of so-called "minor" cycles. To the extent that good and bad harvests contribute to these fluctuations in inventories, they help to explain the phenomenon of minor cycles, and thus help to paint a clearer picture of the development pattern of major business cycles.

The conclusion from the foregoing analysis is not unwarranted that, on the whole, the direct effects of large harvests on the rate of investment of industrial users of agricultural products are probably stimulating, if anything; certainly there is little reason to believe that large harvests will have a damping effect on the rate of investment. In the opinion of the present writer, the effects of lower agricultural prices are likely to be negligible, but still may be positive. The effects on investment in inventories definitely appear to be positive and of a significant magnitude.

### *Agricultural Cycles and Aggregate Purchasing Power*

Harvest cycles will not only affect cost and hence the rate of investment per annum but will also affect the position of the propensity to consume. For price fluctuations, the inevitable concomitant of harvest cycles (in the absence of government intervention), affect not only costs, but also incomes. Farm money incomes, or purchasing power, are obviously strongly influenced by the level of prices of farm products. Similarly, the purchasing power of the nonagricultural population is clearly affected by the prices of farm commodities. To indicate that the purchasing power of the respective groups is affected by agricultural price fluctuations might seem to be belaboring the obvious. It is quite another story, however, to attempt to estimate the net effects of these price movements on the propensity to consume for the community as a *whole*.

Most of the available evidence points to an inelastic demand for farm products with respect to changes in their prices. Undoubtedly then, large crops, producing a decline in agricultural prices,<sup>8</sup> result

<sup>8</sup> Perhaps it should be noted at this point that the implicit assumption underlying this discussion of harvest cycles is that the harvest cycles are taken to occur in a relatively stable economy, or, at least, that crop fluctuations are of

in lower farm incomes; the purchasing power of the farm community is reduced. On the other hand, the purchasing power of the consumers of agricultural commodities is evidently augmented by the lower prices of these products. Do the two effects cancel out? Or are the net results deflationary or stimulating for the economy as a whole? Generalization is almost impossible on any *a priori* basis.

Business obviously falls in those industries supplying the farmer and expands in those industries supplying the nonagricultural population. What the *net* effect is depends on the marginal propensities to consume of the two groups involved, the relative gain in real income by the one group as compared to the loss of real income by the other, possible *lags* in the change in the rate of expenditure of one of the two groups (exerting an effect on national income before the effects of the previous two factors can exert themselves), and the relative importance of the populations of the two groups. In the opinion of the present writer, the loss in real income to the farmer is apt to be somewhat greater than the gain to the nonagrarian population, though by how much it is impossible to estimate in the absence of more information on the problem than now exists. The reason is that farmers rely more or less completely on the farm products for their incomes, while nonagrarian consumers spend only a fraction of their incomes on farm commodities."

Knowledge of the comparative marginal propensities to consume of the agrarian and nonagrarian segments of the population is

considerably greater magnitude than the (concurrent) cyclical movements in the rest of the economy. This note should satisfy the reader who may be wondering about the consistency of this discussion with high farm product prices and the prosperity of the American farmer in the face of the huge crops during the nineteen forties. There is no incongruity at all. The explanation of the farm prosperity during this period is to be found, first, in the abnormal *foreign* demand for American farm products; second, in the government price support program; and finally, in the extremely high rate of income and demand being generated by the other sectors of the economy. In the last case, we say that the rate of expansion in the nonfarm sectors of the American economy has proceeded at a clip great enough to permit absorption of most farm production. Where absorption by the other sectors has been insufficient, the federal government has taken up the slack via its farm price support program.

<sup>9</sup> This statement should occasion no real surprise. The idea underlies the long-accepted explanation of the tendency of farmers to expand their output in the face of falling farm prices. Professor Hicks has laid great stress on the importance of recognizing the role of price changes on the incomes of sellers. See *Value and Capital*, *passim*.

virtually nonexistent. There are bits of evidence which suggest that the farm populations may have a slightly lower marginal propensity to consume than the nonfarm populations.<sup>10</sup> However, a good deal of farm savings also finds an almost immediate counterpart in investment in some durable good, usually capital but, if the higher income is maintained, also consumer goods. On these bases, the higher MPC of the nonfarm groups may offset, more or less, the larger loss in real income that may accrue to the farm population. On the other hand, the tendency of the farm groups to spend a greater proportion of their incomes on durables will undoubtedly result in some deflationary effects, as the incomes of the agricultural groups fall off in the face of the good harvests and price declines.

There is a tendency to conclude from the foregoing that, in the face of an inelastic demand for farm products, the redistribution of real income likely to result from a good harvest may have slightly deflationary results. In industrialized countries like the United States, however, where the agricultural population is comparatively small, this result, if true, is probably negligible. Moreover, when we take account of the possibilities of *exporting* agricultural commodities, a large harvest in any *particular* country may well raise the purchasing power of the farm community and provide a real stimulus to the economy as a whole.

### *International Trade in Agricultural Commodities*

In the analysis of the effects of agricultural cycles up until now, we have implicitly assumed a "closed" economy, that is, one which did not engage in international trade. We shall now take cognizance of the effects of international trade.

The most notable thing about the inclusion of an analysis of international trade is the fact that the world demand for the crops of any one country is much more elastic than the demand at home. Hence, an increase in the harvests of any one country which exports

<sup>10</sup> Because farming is a way of life as well as a commercial proposition in a good part of the agricultural sector, it is often difficult to separate business from personal outlays. The belief that farmers may have a lower MPC than the nonfarm elements is based on the well-known tendency of farmers to devote large portions of increments in income to the acquisition of new farm equipment and other durable capital goods, or to the payment of interest and principal on (often) large debts.

is likely, *in the absence of similar harvests elsewhere*, to result in an increase in the incomes of this country. Moreover, the decline in purchasing power that takes place affects the agricultural populace of another country, not another group in the country under consideration. Furthermore, since the nonfarm population at home will be able to spend more on nonfarm products, all domestic industry will experience a stimulus, more or less. A multiplier effect is also in evidence here, for this situation represents a net increase in national money income, which, in effect, is an increase in the aggregate rate of investment for the country at large.<sup>11</sup> The full extent of this stimulus will depend, in part, on the level of business activity of the foreign countries, for nations' willingness to import seems to be largely dependent on their own domestic level of incomes. In part, too, the importance of this "export effect" depends on the importance of the domestic demand of the country concerned to the total world demand; the more important is the domestic market, the less important is the "export effect."

### *Conclusions on Effects of Agricultural Cycles*

On the whole, we may conclude that if good harvests have any effect at all on the general level of business activity, it is a stimulating one. The net direct effects on investment seem to point to increased investment, particularly when the role of inventory movements is taken into account. The effects on aggregate purchasing power and the propensity to consume remain obscure, to say the least. They appear somewhat deflationary to the present writer, but, at the same time, negligible. When the effects of foreign exports are recognized, a definite stimulating effect seems to be in order for a particular country, although not for the world.

Opposite results may be expected to accrue from bad harvests. The cost of agricultural raw materials will undoubtedly rise, there will be a decline in the volume of freight traffic and other handling, and, perhaps most important, there will be a definite decline in investment in inventories of agricultural products. In addition, there

<sup>11</sup> At a later point we shall have occasion to qualify the above analysis by making allowance for the effects on *imports* of an increase in the money income in this fashion. For a leakage on imports limits the multiplier effect like any other leakage.



will be a decline in agricultural exports, or perhaps a rise in imports; *ceteris paribus*, there is a (algebraical) decline in the net trade balance.

There are certain reasons for believing that, especially in the more industrialized economies, the importance of agricultural cycles for the problem of the general business cycle should not be overestimated, if indeed it is. One fairly obvious reason is that the "good harvests" which we have been discussing do not apply to all crops at the same time. Because of the different weather, and physical and economic conditions that variously affect farm products, good harvests of one commodity are not necessarily indicative of good harvests of all crops. It is clear that the effects of a good harvest of a single product in an economy which is both industrial and diversified must be rather negligible. Similarly, all crops need not exercise the same effect. The results of good harvests in cotton are probably somewhat different from those of good wheat harvests. If the effects of good harvests are to be at all substantial, there is little doubt that a wide variety of commodities must be affected simultaneously. The same is true of bad harvests.

A further reason for minimizing the importance of crop cycles, one at which we have constantly hinted, lies in the steady decline in importance of agricultural production as a portion of total production. Technological progress and other advances in our industrial systems have had many effects in this direction. It has made possible a tremendous expansion in the productive potential of agriculture. At the same time the amount of labor required for agricultural production has been greatly reduced. In fact the portion of total resources devoted to agriculture has been reduced considerably. Technological progress, capital formation, etc., have also led to a huge expansion in industrial production, not only absolutely, but also relatively to agriculture. The resulting rise in incomes has led to a large decline in the fraction of their incomes that people spend on farm products, particularly food. As national incomes rise, economies have persistently tended to devote larger and larger portions of their resources to nonagricultural goods and service industries, and proportionately less to agricultural industries. The inevitable result must be a steady diminution in the ability of

agricultural cycles to be more than a disturbing influence in the development of general cyclical patterns.

Mention might also be made of the more recent developments of government policies as a stabilizing influence on crop cycles. The emphasis on the "ever-normal" granary, the increasing role of price supports in one form or another—both of these have had the effect of stabilizing the degree of price fluctuation in response to crop cycles. The effects on farm prices and raw material costs are thus reduced, as are the effects on activities of the transportation and distributing industries and farm incomes. However, unless the government finances the acquisition of these stocks in a noninflationary manner (*i.e.*, from taxes or bond sales to the public or institutions other than commercial banks), these activities still constitute a potentially important source of inflationary net investment.

We may conclude, then, that agricultural cycles are a factor to be recognized in a full explanation of business cycles. This does not mean, we repeat, that it is correct or accurate to consider an agricultural theory as a possible alternative to the theories of the business cycles discussed earlier in this book. Crop fluctuations are altogether too *random*, that is, they fail entirely to follow any systematic cyclical pattern and hence do not permit the development of a complete and cohesive theory in the manner attempted by the earlier discussed theories. Rather, harvest fluctuations may be best considered as disturbances which at times impart an impulse to the cyclical mechanism of the economic system in the same manner as do wars, new discoveries, new markets, etc. In this way recognition of their influence serves to complement, rather than supplant, theories like the ones discussed earlier. Where the latter, in the main, concentrate on the behavior of the economy in response to disturbances such as waves of innovations, or the opening up of new territories, etc., explanations of the effects of agricultural cycles, like the foregoing, add to the list of disturbances and perhaps demonstrate the manner in which crop cycles may disturb the economy and/or the cyclical pattern.<sup>12</sup>

<sup>12</sup> Note should be taken, too, of the extreme cyclical vulnerability of the agricultural sectors of economies whose agricultural component is a small part of the total economy. As is well known, certain rather unique features of agricultural supply and demand functions tend to make the agricultural sectors

## COST AND PRICE MOVEMENTS

### *Costs and Prices: Time Lags and Profit Margins*

During the course of business cycles all prices do not move together. Wages tend to lag behind selling prices, especially in the early stages of cyclical revival and recovery. Other costs, such as interest rates, rents, and salaries, also tend to lag considerably behind selling prices, because of their contractual nature. Because most plants, in the initial stages of the upswing, are usually operating far below normal capacity, operating (marginal) costs will rise rather slowly (or may even fall for a short time as output expands). In other words, costs in general exhibit a decisive time lag behind selling prices during periods of upswing in most business cycles. The result is, of course, that profit margins expand rapidly during the early stages of revival and create a much greater potential source of impetus than would be the case if costs and selling prices moved together.

During the upper stages of the cycle there is a strong tendency for costs to catch up to selling prices. In the first place, for various reasons, the rate of increase in selling prices slows down considerably, making it easier for costs to catch up. Wages will gradually increase, and in an era of strong trade unions, the pressure for higher wages is a continuing one, especially in periods of prosperity. Interest rates in general will tend to rise, as the demand for loanable funds tends to outrun the supply; this will be especially true of bank rates, as banks begin to feel the pressure of reserve require-

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of the highly industrialized economies of the West much more unstable than the industrial sectors. The features referred to are typically the extreme price elasticity of the supply functions (which, because of *income* effects of price changes, are often backward sloping) and the extreme inelasticity of demand for agricultural products, both with respect to price and income. As a result of these factors, agricultural prices and incomes have, in the past, tended to fluctuate more widely than their counterparts in the industrial sectors during the course of general cyclical movements. There is little doubt that the extreme instability of farm incomes and prices has tended to contribute to the intensity and amplitude of the different phases of the business cycle, even in the cases where agriculture is largely a *passive* factor—the butt of the cyclical fluctuations in the industrial sectors. For an excellent discussion of this role of agriculture, see T. W. Schultz, *Agriculture in an Unstable Economy* (New York, McGraw-Hill Book Company, Inc., 1945).

ments and, possibly, higher central bank rediscount rates. Other contractual costs will also rise when the contracts expire, in the face of rising prices elsewhere.

Costs will rise with the employment of less efficient workers, with the working of existing plant and equipment more and more intensively and the bringing into operation of idle, less efficient plant and equipment. Furthermore, when profit margins are good, management tends to grow lax: an increasing amount of waste and inefficiency appears, and is tolerated or goes unnoticed.

As costs begin to catch up to selling prices, profit margins start to decline. The condition of rising costs may well hasten a downturn in business activity which was in the making and which might at least have been postponed had costs not risen as fast as they did.

Once the decline sets in, the persistent tendency of certain costs to lag behind falling prices tends to accentuate the effects of the downswing on existing firms. Heavy overhead costs in the form of interest, depreciation, and obsolescence charges, etc., tend to play havoc with all firms, but particularly those whose financial resources are not strong (but who may be quite efficient in the technical sense). The presence of fixed charges forces many highly efficient but financially weak firms out of business quite indiscriminately during the business cycle.<sup>11</sup>

While the reduction of overhead charges would undoubtedly tend to relieve the financial pressure on existing firms, and thus act as a mitigating force on the deflationary pressures that characterize a major downswing, there is some danger of exaggerating the benefits to be derived from cost reductions. The danger is that of misplaced emphasis in approaching the problem of business-cycle

<sup>11</sup> There have been in the past, and perhaps continue to be, those who have viewed the business cycle as a "cathartic" for ridding the economy of marginal (in the efficiency sense) firms. However, major cyclical depressions are usually so devastating in their effects that they tend to sweep aside all but the most financially powerful firms. Unfortunately, financial strength tends to be a function of size rather than efficiency, and the very large firms, contrary to most popular notions, are seldom the most efficient. Their usually great financial strength, however, renders them rather impervious to the tidal waves of economic and financial collapse. The smaller, but often more efficient, firms are frequently engulfed. Viewing sympathetically the supposed function of business cycles as a means of ridding the economy of marginal firms is equivalent to

policy. Thus there is some doubt concerning the efficacy of a reduction in the general level of wage and interest rates both on the output and investment of existing firms and some doubt about the impetus such reductions would give to the appearance of new firms. Much of the reasoning behind this statement has already been developed in Chapter 4. It is highly improbable that in the face of a general decline in total monetary demand, cost reductions can be really effective as an actual stimulus to business activity. It is true, as in the case just mentioned, that losses might be less in many cases, but it is extremely doubtful, in the face of a continuing decline in *aggregate demand*, that smaller losses, because of cost reductions, could provide the basis for the volume of investment of the order of magnitude required for a major upswing. Much more is to be gained, in the opinion of the present writer, by concentrating on the factors which are behind the deficiency in investment and, perhaps, in consumption, for low levels of both of these (the latter in some relative sense) invariably mark the downturn of business cycles.

### *Cost-Price Movements and Other Business Cycle Theories*

Time lags between costs and prices should properly be construed as surface manifestations of deeper underlying cyclical forces. The more interesting questions begin to arise when we seek the reasons for the expansion and contraction of profit margins, besides the relative differences in the rate of change of costs and selling prices. It is the underlying reasons which provide the basic goal of business-cycle theory. What factors provide the impetus which induces *investment* to start upward in the first place? For prices begin to rise only in response to a significant expansion in investment activity, and, often, in the presence of large-scale unemployment, prices do not begin to rise significantly for some time. Then, what causes the rise in prices to slow down in the upper reaches of the business cycle? It is the answers to these more searching questions that the theories of the business cycle discussed earlier try to answer.

Some writers, notably the late Professor W. C. Mitchell,<sup>14</sup> have

<sup>14</sup> Mitchell's attempts to develop a theory of the cycle out of relative movements in costs and selling prices are to be found in most of his voluminous works on business cycles. Among his more prominent works, the following may

attempted to make a theory of the business cycle out of cost-price movements. However, these attempts appear to be cases of mistaken emphasis. We must agree with Professor Haberler that *any* theory of the business cycle is perfectly consistent with expansions and contractions of profit margins.<sup>15</sup> In private-enterprise economies, such as the ones we have under consideration, the moving force is the profit motive. It is expected profits (the marginal efficiency of capital and the rate of interest) which form the basis of all investment decisions. "In a competitive business economy, the statement that a restriction in industrial activity is due to the fact that production cost has risen above selling price does not add very much to the mere statement that industrial activity has been reduced. . . ." <sup>16</sup> The net outcome of any theory of the business cycle, whether it be underconsumption, overinvestment, Keynesian, or what have you, is that expected prices do not cover costs of production, or using our terminology, the marginal efficiency of a contemplated investment is less than the interest rate, so that the investment will not be undertaken.

It is true that costs rise as upswings proceed, but, except for the interest rate, the more interesting questions concern the reasons why selling prices do not continue to rise to offset the rising costs. There have been times when prices did continue to rise faster than costs for extended periods, but finally slowed down. Investigation of the reasons for the slowing down of the price rises undoubtedly sheds much more light on the nature of the cyclical forces than investigation of the reasons for the rise in costs.

The superficiality of the simple cost-price approach is demonstrable by considering some of its implications. One implication is that if factors like waste, utilization of stand-by units of plant and equipment of inferior quality, the employment of less efficient workers, etc., could be eliminated, the business cycle would disappear. In a similar vein, to treat the rise in interest rates as a simple rise in costs

be cited: *Business Cycles, The Problem and Its Setting* (New York, National Bureau of Economic Research, 1927), and *Business Cycles and Their Causes* (Berkeley, University of California Press, 1914).

<sup>15</sup> *Prosperity and Depression* (Lake Success and New York, United Nations, 1946), pp. 106-107.

<sup>16</sup> *Ibid.*, p. 106.

is to ignore some of the crucial questions about why the interest rate rises, such as the monetary or overinvestment theories try to answer.

A further implication is that a contraction of costs through elimination of waste, the employment of only efficient workers, the lapsing back into idleness of old plant and equipment, etc., is sufficient to bring about a rate of investment great enough to start a major cyclical revival. Such a position is extremely tenuous, to say the least. In the absence of some factor like a great innovation, a large increase in demand, the discovery of new markets and/or territories, etc., a revival induced by cost reductions of the type under discussion is likely to be very anemic and short-lived.<sup>17</sup>

On the whole, therefore, it would seem best to regard the time lags between costs and selling prices in the same light as that of the other strategic factors under discussion. That is, the time lags, which vary considerably from cycle to cycle, are among the factors which influence the course of the different cycles, contributing to the explanation of the various phases of the cycles, and helping to give each of the cycles an individuality of its own.

#### THE ROLE OF EXPECTATIONS

In previous chapters we have variously had occasion to note the exceeding importance of expectations in the decisions that businessmen must constantly make. Production and investment decisions in the modern industrial economies of the world today are made largely in anticipation of *future* demand, costs and prices, etc. But the future, we have seen, consists mainly of the unforeseeable, the unknowable. And the further into the future a current decision must be projected, the more uncertain is its outcome. It is the element of *uncertainty* about the future that makes expectations such an important factor in the cyclical movements of the modern industrialized economies.

If economic events of the future were foreseeable or predictable at least in a manner subject to the laws of probability, our present

<sup>17</sup> The closely related problem of general wage-price flexibility and investment has been discussed at length in Chapter 4, pp. 160-179 and is further discussed in Chapter 15, pp. 602-609.

statistical tools could be used by businessmen to evaluate rather closely the outcomes of various decisions. Expectations in this case would occasion little difficulty. They would tend to be much less volatile, and the amplitude of their fluctuations that did remain would tend to be much more narrow.

It is precisely because the economic phenomena of the future are not subject to the statistical laws of probability—are, in fact, surrounded by all sorts of doubt and uncertainty—that expectations warrant serious consideration in a discussion of the elements of business-cycle analysis. Once the element of objectivity is removed by the uncertainty attached to the future, the possibility of “waves of optimism and pessimism” comes into full sway. These waves of optimism and pessimism demand separate treatment, apart from the various factors discussed in connection with the cycle theories discussed earlier and the other strategic factors discussed in this chapter.

Like the other strategic factors discussed in this chapter, however, the role of expectations should properly be considered as a *supplementary* one, rather than one offering the possibility of a complete, integrated theory unto itself. Psychological factors primarily affect the timing, intensity, and amplitude of various phases of the different cycles, and thus help to determine the duration of the various cycles. They are much too random, however, to permit the development of a thoroughly systematic theory of the cycle from them alone. Hence, as with the other strategic factors, we shall treat them as disturbances in the pattern of cyclical behavior. Optimism is the inevitable concomitant of the prosperity phase of the business cycle, pessimism the attendant of depression periods, and each of these, as we shall see, may also indirectly affect the opposite phase.

### *The Sources of Optimism and Pessimism in Expectations*

We have observed that it is the element of uncertainty about the future that gives rise to waves of optimistic and pessimistic expectations. The reason is that the uncertain, unknowable future provides a veritable breeding ground for error in the expectations of businessmen. Professor Pigou, among many others who have emphasized the importance of erroneous expectations as a source of



instability, has pointed out most clearly the precise sources of error in the modern economic systems.<sup>18</sup>

The most obvious source of error lies in the chief characteristic of modern production—production in anticipation of demand. The result of this type of production is the substitution of expected for actual facts, in a system where (unpredictable) *change* is the normal thing.<sup>19</sup> Under these conditions, mistakes in the expectations of businessmen become a very real possibility. Even here, however, the implications of erroneous expectations would not be so important if it were possible to alter easily production and investment plans once forecasting errors were realized. But economic systems which produce in anticipation of demand invariably also utilize roundabout techniques of production and much durable equipment to produce their goods, which effectively prevent quick changes in production plans.

### *The Effects of Roundabout Production Techniques*

A roundabout production process may generally be described as one which involves a considerable time interval between the moment a decision is made to produce a good, capital or consumer, and the time the finished product makes its appearance. The longer the time period involved, the more important are likely to be the errors in estimates of future demand, for the longer the time period of production, the greater the possibility of some unforeseen event, and the greater the possibility that the errors will *cumulate* and appear, finally, in greatly magnified form. Hence it is that industries producing heavy durable goods, whose time periods of production often occupy many years, seem to show the greatest amount of error in forecasting and the widest fluctuations in the course of the business cycle. Once the production processes in the capital goods industries have proceeded beyond any but the

<sup>18</sup> See A. C. Pigou, *Industrial Fluctuations* (London, Macmillan & Company, Ltd., 1927), especially Chaps. VI and VII. Other references are to be found at the end of this chapter.

<sup>19</sup> As indicated earlier, if there were no change in the variables of the economic system, that is, if the Stationary State were a reality, or even if change took place in more or less a predictable way, production in anticipation of demand would provide no difficulty. It is the *unpredictable* character of change which provides the source of error in expectations.

very initial stages, the realization of error in expectations is of little avail. In spite of a decline in the demand for the final product, for example, the investment process must be completed if *total* loss of invested funds is to be avoided. Processes are very often brought to fruition in circumstances of demand very different from those which prevailed when the investment projects were undertaken. And, of course, in the dynamic societies of the modern industrial age, where unpredictable change is a commonplace, a great many things may happen to upset the calculations of businessmen during the long intervals between the time production and investment processes are begun and the time they begin to bear fruit.

### *The Influence of Competition*

To a large extent, much of the error arising from the roundaboutness and the durability of the processes of production might be eliminated were it not for the competitive type of economy that prevails in most countries. In a competitive system of enterprise accurate knowledge of the actions of competitors in response to a change in demand, for instance, is difficult. Particularly is this so in the presence of the extreme precautions the average firm takes to surround its activities with an aura of secrecy, in order to avoid placing itself at a "competitive disadvantage." The result of this situation is a tendency on the part of most producers to pay too little attention to similar actions of competitors. During periods of boom there is a tendency to *underestimate* the expansion in production plans of competitors, that is, to exaggerate the share of total demand of the individual firm. Under the pressure of the pessimism which usually accompanies slumps, businessmen tend to overestimate the level of production on the part of competitors.

The result of underestimating the expansion programs of competitors during upswings is that selling prices turn out to be considerably lower than anticipated, because the supply appearing on the market is greater than expected. Realized profit margins may be less than expected not only because selling prices are lower than expected, but also because *costs* often turn out to be higher than expected. Failure to recognize the extent of the expansion activities of competitors not only results in underestimation of final

aggregate supply, but leads also to an underestimation of the effects these expansion activities will have on the upward movements of such costs as bank rates, wage rates, raw material prices, etc. Each of these costs will tend to be higher than expected because the demand for the factors involved will be greater than anticipated. Both the higher-than-expected costs and the lower-than-expected selling prices, of course, make the actual profit margins less, often considerably, than the anticipated ones. As we shall soon see, a period of retrenchment will ensue, being especially severe if the expected profit margins actually turn out to be losses.

In a similar fashion, during periods of recession and depression, the accompanying pessimism often leads firms to *overestimate* the rate of producing activities of their competitors. To a large extent this impression is created and given credence by the continued strong outflow of production for extended periods after new orders have declined. The reason for this evidently lies in the roundaboutness of production, whereby goods are brought to fruition long after they have been ordered or started in the production process. The reasons notwithstanding, the tendency to overestimate the production of competitors leads to an exaggerated view of the magnitude of future supply and future price declines and of the height of input costs; production and investment, etc., are thus contracted much more than is necessary to bring supply back into a profitable relationship with demand. When stocks become exhausted faster than anticipated, when prices are higher and costs lower than foreseen, when profit margins begin to widen earlier than expected, the stage is set for an upswing in the level of business activity.

### *Effects of Speculation*

The effects of competition as a factor tending to make for erroneous expectations are enhanced by the great amount of speculative activity that prevails in the presence of ignorance, both about the future and about activities of competitors. Specifically, we have in mind the large-scale inventory speculation that is carried on by middlemen and retailers during the course of upswings. Once upward price movements begin, these groups tend to increase their orders not only to meet current increases in sales, but also to increase

the size of their stocks in anticipation of selling them in the future at considerably higher prices than those at which they were bought. The result is increased orders to manufacturers—at a faster rate than final demand is expanding. When orders begin to be *delivered* at a faster rate than that at which buyers are willing to take them, orders are sharply curtailed in an effort to keep inventories from piling up. Prices will also be cut for the same reason. The significance of this speculative activity is that once the break comes, prices and orders to manufacturers will tend to fall much faster in the presence of inventory unloadings than they would have if orders and production had been geared more closely to current demand alone.

### *The Proximity of Businessmen to Each Other*

Because of various relationships which businessmen have with each other, it becomes a fairly simple thing for optimistic or pessimistic outlooks to spread quickly throughout the business community, taking the form of “waves” of optimism and pessimism. Firms in the same industry, for various reasons, tend to concentrate in the same geographical areas, making it possible to exchange views fairly easily. The same is true in the big cities where giant office buildings containing hundreds of offices abound. Similarly, in most cities, a variety of businessmen’s clubs and trade associations exist which also afford an easy and convivial exchange of views and opinions. Insofar as businessmen in the large cities also tend to inhabit the same or contiguous suburban communities and ride the commuter trains together, they have additional opportunities for giving forth on the current business situation “as they see it.” The widespread use of trade journals and business report sheets, too, facilitates no end the spread of the prevailing state of mind in the business community.

The prevailing state of business sentiment also wends its way throughout the business community via the various interfirm buyer and seller relationships. A spirit of optimism on the part of one group of firms will probably lead to increases in orders from their suppliers. These, too, may increase orders from *their* suppliers, and so on. A chain reaction is thus set in motion. Firms inclined to be on the optimistic side will now be, more or less, reassured in their

optimism; the groundwork is being laid for possible future over-optimism. In the same way, pessimism on the part of a few, who proceed to contract their orders to their suppliers, starts a chain reaction in a downward direction, and confirms the doubts that may have begun to lurk in the minds of many businessmen.

Debtor-creditor relationships also provide a network of inter-relationships through which trickles of optimism and pessimism may assume wavelike proportions. If a spirit of doubt prevails, for example, this doubt may seemingly be confirmed by a change in the behavior of some firms in their credit relationships. A number of firms may go bankrupt, for example, and out of this development may come a whole series of ramifications. Perhaps creditors of the bankrupt firms may be financially embarrassed by their collapse and proceed to demand payment on notes and accounts receivable ahead of schedule. The possibilities of a chain reaction in the form of the contraction of outstanding credit are clear. Right in the middle of this action may be the commercial banks, who, observing the rise in business failures, themselves may tighten up their credit activities, by raising interest rates, strengthening collateral requirements, refusing to renew a certain portion of outstanding loans or decline requests for new ones, and so forth. The possibilities of a liquidity crisis are very real, particularly in the modern industrial systems, where the bulk of business transactions are carried on with the aid of a vast system of credit. The numerous liquidity crises of the past attest to the reality of this danger. We should not forget, too, that the great liquidity crises of the past have been made possible by the extreme ease with which credit is extended during the periods of optimism that accompany many of the cyclical upswings in business activity. Business firms, commercial banks, and other credit institutions, all contribute to the spiral of credit expansion which ultimately contributes to the intensity of the periods of cyclical decline.<sup>20</sup>

<sup>20</sup> As we have noted earlier in another connection, the large holdings of Federal government debt by commercial banks in the United States will undoubtedly greatly reduce the extent of bank credit contraction. For the government certainly is not going to pay off any debt during periods of deflation, nor are banks likely to try to unload much of government debt. Moreover, central banks the world over are sure to pursue very easy credit policies in such times.  
(Continued on next page.)

*Errors of Optimism Lead to Errors of Pessimism*

Errors of optimism and pessimism are not independent of each other. Rather, they tend to provide the basis for each other. The larger the error in one direction, the larger tends to be the error in the other. Thus, starting from a time of slump, assume one of the many possible stimuli to the marginal efficiency of capital sets in.

The ensuing investment processes will ordinarily be financed via the activation of idle cash balances and the expansion of bank credit. It may thus be expected that the money incomes of the various industrial groups will rise, and along with this their consumption. The increased expenditures may be expected to stimulate businessmen throughout the economy, who themselves will be induced to expand their production and orders for new capital goods. In the meantime, however, because of the lapse of time involved in the production processes, money income and demand will be expanding at a faster rate than the output of finished goods, consumer as well as producer goods. The result will be a rise in prices. Such a rise in the level of prices serves to push the marginal efficiency of capital up still further, to reassure producers that their expectations were entirely correct, with the result that production and investment are likely to expand some more. Even if the original expectations were, perchance, correct, however, the wave of optimism bred during the expansion process too often leads to *overexpansion*. When the finished products do make their appearance in substantial quantity, prices are likely to fall and lead, as a result of the now-realized erroneous expectations, to periods of undue pessimism. The marginal efficiency of capital takes a drop far below, often, the actual rate of return viewed objectively.

We may well use Keynes' oft-quoted passage to describe the transition from undue optimism to equally undue pessimism.

It is an essential characteristic of the boom that investments which will in fact yield, say, 2 per cent, in conditions of full employment are made in the expectation of a yield of, say, 6 per cent, and are valued accordingly. When the disillusionment comes, this expectation is re-

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The possibilities of a repetition of the extreme liquidity crises of the past are thus fairly limited.

placed by a contrary "error of pessimism," with the results that the investments, which would in fact yield 2 per cent, in conditions of full employment, are expected to yield less than nothing; and the resulting collapse of new investment then leads to a state of unemployment in which the investments, which would have yielded 2 per cent in conditions of full employment, in fact yield less than nothing.<sup>21</sup>

The extreme pessimism results in a sharp contraction of production and investment. As we have noted elsewhere, however, the processes of production and investment are not so easily stopped. New investment projects continue to be completed, and the supply of many currently produced goods continues to be increased. The deflationary movements and the attendant waves of pessimism are thus reenforced. After a while, as supply continues to be curtailed, the stocks on businessmen's shelves begin to be depleted;<sup>22</sup> the business community begins to realize that it was overly cautious and starts to expand its orders. The stage is now set for a possible repetition of the process, if a sufficient stimulus to the marginal efficiency of capital can be found.

### *The Precise Place of Expectations in Business-Cycle Analysis*

From the immediately preceding discussion the reader may now readily understand what was meant by the earlier remarks that a Psychological Theory of the Business Cycle is of dubious advantage. For the foregoing description of the transition from optimism to pessimism and back again must have sounded strangely familiar. The process could have been made to fit any of the earlier discussed cycle theories, from a pure monetary explanation to a rigid under-consumption approach. All these theories implicitly contain something about businessmen's psychological behavior, and some explicitly refer to the influence of expectations and the importance of possible error in them.

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<sup>21</sup> J. M. Keynes, *The General Theory of Employment Interest and Money* (New York, Harcourt, Brace & Company, 1936), p. 321.

<sup>22</sup> It is during such periods of deep depression that consumption which will not fall below a certain minimum level begins to exceed national income, that is, disinvestment sets in. This situation is depicted on any of the propensity-to-consume—national-income diagrams at all points to the left of the intersection of the consumption curve and the 45° (100 per cent) line.

What, then, is the strategic role that expectations play in the patterns of cyclical behavior? We have noted many times the various objective developments which may stimulate the hopes of businessmen and raise the marginal efficiency of capital. But a priori reasoning, together with experience from previous business cycles, indicates that investors do not always respond in the same way to changes in the objective factors. At times a fall in the interest rate has been an important stimulus to new investment; at other times it has had absolutely no effect. At times an increase in demand or a new technological discovery raise the marginal efficiency of capital sufficiently to stimulate a wave of new investment; at other times the upswing in investment activity is decidedly anemic and quickly subsides. Similarly, rises in the interest rate and dampers to the marginal efficiency of capital may create only a slight break in an upward movement in business activity, or, unpredictably, result in a sharp and prolonged downswing in investment and other activity.

The role of expectations should now be apparent. In a very haphazard and unpredictable way, expectations serve primarily to loosen the connection between changes in the so-called objective influences on investment and movements in the latter itself. During periods of optimism, *stimuli* to activity are considerably intensified, reinforced; factors which might otherwise damp the rate of activity in investment have little or no effect, or if they do, it is only temporary. Contrariwise, when undue pessimism reigns, factors which otherwise might be expected to stimulate investment have little effect, and what effect they do have is short-lived. Too, when businessmen become overly cautious during periods of prosperity the mildest kind of damper to the marginal efficiency of capital may be sufficient to precipitate a sharp break in business activity. Viewed in this way, the introduction of expectations into the analysis of business cycles

. . . implies that the connection between a fall [rise] in the rate of interest and a change in the other objective factors, on the one hand, and the decision of the entrepreneur to invest more [less], on the other hand, is not so rigid as the "economic" theories sometimes maintained.



If in a given situation the rate of interest falls [rises], or demand increases [decreases], or there is a change in the technological situation [exploitation of an invention or introduction of an innovation], it is not possible on the basis of these data alone to predict the strength of the entrepreneurs' reactions or the extent to which they will increase [decrease] investment.<sup>23</sup>

The one thing that might be said by way of generalizing on the effects on the patterns of cyclical behavior of expectations is that the stronger the expectations about the profitability of future investment, the greater is likely to be the amplitude or intensity of any given cycle and the shorter its duration. The more optimistic are businessmen, the higher is likely to be the rate of investment, and therefore, the rate of rise in national income. But this rapid rate of investment will not only increase the amplitude of the upswing, it is also likely to shorten the *length* of the upswing. In the first place, the high rate of investment hastens the accumulation of the stock of capital goods. We have observed that the larger the existing stock of capital goods the lower is likely to be the yield of new additions to that stock. Falling current yields tend to damp the marginal efficiency of capital of further planned investment projects, and current yields are likely to fall faster the higher is the rate of investment or capital formation.

Moreover, we have seen that overoptimism breeds great overestimates of the marginal efficiency of capital. The more optimistic businessmen are, the farther off the mark are their estimates of the marginal efficiency of capital likely to be from the actual yields of new investments. And the wider of the mark they are, the more easily and quickly are businessmen likely to be disappointed. Contemplated without the heat of extreme optimism, the marginal efficiency of capital of planned investment projects would undoubtedly be much lower and approximate much more closely the actual yields of these investments, thereby leaving businessmen considerably less exposed to bitter disappointment. As a result, the possibilities of prolonging the upswing would be much enhanced.

<sup>23</sup> Haberler, *Prosperity and Depression*, p. 146. Words in brackets supplied.

Too much optimism in expectations, then, is likely to increase the amplitude of the upswing by hastening the rate of investment. But the faster the rate of investment the shorter may be the duration of the upswing. For the faster the rate of capital formation the more quickly are the yields on new investments likely to fall. And the faster current yields fall, the more quickly will approach the day of reckoning, when businessmen find their high estimates of the rates of return, engendered by their optimism, far above the actual yields. The downturn will set in more rapidly than would be the case had the rate of investment proceeded more slowly and with the marginal efficiency of capital not quite so inflated by overoptimism.

By a similar process of reasoning, it may be seen that overpessimism is likely to accelerate the rate of decline during periods of downswing and also shorten the length of the downswing. For the more pessimistic are the estimates of the marginal efficiency of capital, the higher will be the rate of contraction of new investment. Hence the decline in national income will be greatly intensified, and the period of downswing may possibly be much shorter.

However, there is a strong possibility that the same overpessimism which shortens the period of downswing may lengthen the period of depression, that is, may lengthen the period during which investment cannot be stimulated enough to provide a national income even close to full employment. It is difficult to evaluate this latter possibility, and there is a danger of overstressing the role of expectations. It is not always easy to determine how much a low marginal efficiency of capital is the product of objective economic reality and how much it is a product of overly pessimistic expectations. One may easily be treading on treacherous ground in imputing long-drawn-out depressions, of the type the world experienced during the thirties, for example, solely to overpessimism which was not grounded largely in reality. Thus, keeping in mind the possibility that overpessimism may sometimes be partly responsible for lengthening the period of depression, we may conclude that, on the whole, strong expectations intensify and shorten both the periods of upswing and downswing, and hence have a tendency, *ceteris paribus*, to shorten the business cycle. Weak expectations,

on the other hand, will probably tend to lengthen the cycle and reduce the intensity of the upswings and downswings.<sup>21</sup>

In all the different ways discussed, expectations, in varying degrees of strength, influence the path of development of the various business cycles. It is important, therefore, to add expectations to the list of factors which disturb the patterns of cyclical movements and give to each cycle an individuality of its own.

### *Other Ways in Which Expectations Affect the Business Cycle: The Interest Rate*

In the foregoing discussion of the role of expectations, we have talked as though expectations affected only investment. For example, we spoke of the possible effects changes in the rate of interest might have on investment under circumstances of optimism and pessimism. In doing so we seem to have overlooked the fact stressed in the chapter on Keynes, namely, that the movements in the interest rate itself are subject to the influences of expectations. Without repeating the discussion of these influences, we remind the reader once again of the role of expectations concerning the future movements of the interest rate on its current level. Expectations, during periods of slump, that the rate of interest will rise in the near future may well prevent a necessary (further) decline in the interest rate in the present. Moreover, we should not forget that the precautionary, as well as the speculative, motive is an "expectational" concept. When businessmen become pessimistic, they invariably desire to increase their margins of cash, in order to avoid any further financial embarrassment; when they are optimistic, the apparent need for cash is considerably less. Changes in the precautionary motive, it will be recalled, result in shifts in the position of the liquidity preference schedule, which shifts also influence the rate of interest.

### *Consumption*

Expectations also affect the propensity to consume and the marginal propensity to consume. People's consumption outlays will

<sup>21</sup> We might add that in reducing the intensity of the upswing, weak expectations may also prevent the upswing from reaching the full employment level of income.

vary considerably with their expectations concerning such things as future prices, future employment, and future income. An expected decline in any of these variables will usually result in some downward movement in the propensity to consume; an expected rise in any of them may be expected to have a stimulating effect on the consumption function. Similarly, the more optimistic consumers are about future employment and income, the greater in value is likely to be the *marginal* propensity to consume. Pessimism about the future *maintenance* of income and employment, in a period when these are rising, may reduce the marginal propensity to consume: people begin to build up their cash balances in anticipation of future emergencies. When income and employment are declining the corresponding decline in consumption may be greater the more pessimistic people are about the future, and less, the less pessimistic they are.<sup>25</sup>

In conclusion, the reader should note that the discussion of the role of expectations has been carried on without reference to the type of maladjustment in the economic system to which the errors in expectations (optimistic or pessimistic) give rise. The maladjustments may be of the underconsumption variety, of the capital shortage variety suggested by the overinvestment school, etc. The role of expectations is fully compatible with any theory of the business cycle with which one cares to deal.

#### THE ROLE OF INVENTORY FLUCTUATIONS

In Chapter I, we had occasion to discuss the distinction between major and minor business cycles.<sup>26</sup> There the position was taken that minor business cycles, whose average length approximates  $3\frac{1}{2}$  or so years, originated in the fluctuations of investment in inventories, which virtually all businesses maintain. In this section, we shall examine more thoroughly the nature and influence of movements in inventories.

Before doing so, it is well to point out that although inventory

<sup>25</sup> In spite of our having taken cognizance of the effects of expectations on consumption, particularly, it is probably true that expectations play a relatively more important role as a source of influence on investment than on consumption.

<sup>26</sup> Cf. pp. 19-23.

movements are *usually* responsible for the minor cycles that have been observed in the course of the history of business cycles in various countries, there have been occasions when other factors have been adduced to explain the minor cycles. Temporary over-investment in a particular channel of investment or industry may cause a brief downturn in business activity until the slack is taken up elsewhere. Sometimes very special situations arise, which upset, for comparatively brief periods, the confidence of businessmen and cause a temporary slackening in the rate of investment. Factors like prolonged strikes, international disturbances, or some major event in an important segment of industry, etc., may be adduced to explain certain minor recessions. The Ford shutdown in 1927, when the company underwent a wholesale retooling program in converting from the production of the Model T to the Model A, is often cited as the major factor in the slight dip in business activity which characterized most of the year of 1927. The great coal strike of 1927 is also frequently mentioned as an important factor in this minor recession. By and large, however, minor fluctuations in business activity and employment may be associated with fluctuations in inventory investment, even in those cases where certain very special factors may also have been partly responsible.

### *The Relationship Between Major and Minor Cycles*

As noted earlier in Chapter 1, the major business cycle, the type of cyclical fluctuation into which we have been trying to gain insight, has a duration of *approximately* 6 to 13 years, with the average being close to 8. The minor cycle varies from 18 months to about 4 years in length, averaging about  $3\frac{1}{2}$  years. From a methodological point of view, it seems best to consider the minor cycles as interruptions in the periods of upswing and downswing of major cycles. In this connection, however, the statistics reveal that very seldom do they interrupt downswings; in the vast majority of cases, minor recessions have interrupted major cyclical movements during periods of upswing of the latter. There have been few prolonged upswings in business activity that have not been interrupted by at least one minor cycle, and some have been marked by two minor recessions. The prolonged upswing from 1921 to 1929 was marked,

for example, by two minor cycles: one lasting from 1921 to 1924 and the second lasting from 1924 to 1927. The evidence is indisputable that these two minor cycles, whatever may have been the nature of their initiating forces, were primarily inventory cycles.<sup>27</sup>

The reader will probably remember quite vividly the recession that took place in the post-World War II year of 1949. Although *fixed* investment declined moderately, the recession occurred "largely because the inventory buildup of the year before ceased and was succeeded by some liquidation of stocks." The rapid accumulation of inventories from 1946 through 1948 had brought inventories into their normal relation with current and anticipated sales, and probably carried them slightly *beyond* their normal level. The result was a net *disinvestment* in inventories in 1949 amounting to 3.7 billion dollars, in contrast with a net investment in inventories of 6.5 billion dollars in 1948.<sup>28</sup> The evidence is quite plain that the 1949 recession was primarily an inventory recession.

It is evident that inventory recessions may interrupt or slow down a basic upward movement in investment and national income. The reason is that businessmen—manufacturers, middlemen, and retailers, alike—for various reasons, often involving circumstances beyond their control—fail to maintain their inventories in proper relation to their sales. At first they permit stock orders to lag behind sales, and then, in their efforts to build their inventories up again, bring about a spurt in inventory accumulation which carries stocks far beyond the level warranted by sales. When they become aware of their mistakes, they contract orders and production below the level of current sales in an effort to absorb the redundant inventories; the result of this action is an inventory recession. The recession will

<sup>27</sup> The data supporting this assertion are to be found in S. Kuznets, *National Income and Capital Formation, 1919-1935* (New York, National Bureau of Economic Research, 1937). Professor Hansen has charted Kuznets' figures on investment, which bring out quite plainly the importance of changes in the level of inventories in these cycles: see *Fiscal Policy and Business Cycles* (New York, W. W. Norton & Company, 1941), p. 56. While there is some doubt about the 1924-1927 cycle, which is virtually imperceptible in the statistics of most time series and may have been dominated by the decline in construction activity which set in two years earlier, it is plain that the 1921-1924 cycle was dominated almost entirely by the movements in inventory investment.

<sup>28</sup> See the *Survey of Current Business* (Annual Review Number, February, 1950), p. 1 and *passim*.

come to an end when disinvestment in inventories ceases. Very often a recession will even cease merely as a result of a slowing down in the rate of *disinvestment* in inventories.

At this juncture we should take cognizance of the reasons why inventory recessions do not lead to major crises and downswings in national income and employment. The basic reason is to be found in the underlying bases of a prolonged cyclical upswing in business activity. Major cyclical upswings have been invariably characterized by a major expansion in the rate of investment—in plant and equipment, and in other types of construction activity besides industrial plant, all in addition to investment in inventories. In terms of our earlier analysis, this means a rising investment schedule, and therefore, a rising *equilibrium* level of income. Overinvestment in inventories may properly be described as a spurt in *induced* investment beyond the equilibrium level dictated by the rate of *autonomous* investment; these disparate movements in the rates of autonomous and induced investment have been described in Chapter 3, in the discussion of the interaction of the acceleration and multiplier effects. Major cyclical upswings will be maintained, *and kept from turning into major depressions by inventory recessions*, as long as the rate of *autonomous* investment is sustained, or, in the event of a decline, falls off very little. And so the statistics reveal that, in the cases of the three inventory cycles referred to above, during the period of inventory disinvestment, investment in plant and equipment, while failing to advance, was at least maintained, or declined insignificantly. Apparently, then, autonomous factors are strong enough to provide a solid floor beneath *aggregate* investment, of which inventory accumulation is only a part. The result is that aggregate investment is well maintained, and sustains the economy during the interval of inventory decumulation, thereby limiting the duration and depth of the inventory recession and providing the basis for a speedy renewal of the major upswing.

There may also be occasions when inventory cycles appear to *initiate* the upward movement of a major revival or even be responsible for a major downturn. In the former case, it is to be noted that an upward spurt in inventory accumulation may provide the spark for a major revival in autonomous investment, but this is

the best that can be hoped for. Certainly, unless a major upsurge in autonomous investment does take place, the upswing will be comparatively short and anemic and fall far short of full employment. However, while the basic groundwork for a sharp expansion in autonomous investment must be present to provide a prolonged upswing, there is no gainsaying the possibility of a revival in inventory investment providing the initial impetus necessary to start the heavy investment activity in other outlets.

Similarly, an inventory recession may at times turn out to be the straw that breaks the economy's back and provide the push needed to initiate a major downswing and depression. Here, too, however, the attempts to reduce inventories cannot be made to bear the responsibility for a major depression. It is true that inventory decumulation may advance the time when the major downturn occurs, but the basic weaknesses in the structure of autonomous investment are undoubtedly already strongly to the fore. The factors which affect the marginal efficiency of investment in such things as fixed plant and other construction, in equipment, etc., most assuredly are wielding their depressive effects at the time an inventory recession sets in.

Inventory cycles, like all the strategic factors discussed, thus affect the pattern of behavior of the various major cycles. They most certainly may influence the timing of upper and lower turning points of the major cycles. They may intensify a major upswing or downswing, or even slow down the rate of change in national income of the major upswings and downswings, thus affecting the amplitude of the major cyclical movements. But in no sense can they be made responsible for the major cycles themselves. Explanation of the latter is to be found in the fluctuations in autonomous investment, aided and abetted by cyclical movements in the propensity to consume.

It should be noted, further, that in many cases inventory movements affect the business cycle not only by changes in the direction of investment, (*i.e.*, by changes from investment to disinvestment or vice versa), but often merely by changes in the *rate of change* of inventory accumulation or decumulation. There is clear evidence, for example, that the upturn of 1933 was initiated by the sharp de-



cline in the *rate* of disinvestment in inventories, with investment in fixed capital remaining virtually unchanged at the time. Professor Hansen has estimated that in 1932, 3.1 billion dollars of gross investment in fixed capital was offset by 2.4 billion dollars of *disinvestment* in stocks. In 1933, however, 3.0 billion dollars of investment in plant and equipment was offset by only 1.1 billion dollars of disinvestment in inventories. Aggregate investment thus increased from 0.7 billion dollars in 1932 to 1.9 billion dollars in 1933. A decrease in the rate of disinvestment in inventories allowed total investment to rise sufficiently to set a period of expansion going in 1933.<sup>29</sup> A similar decline in the rate of inventory disinvestment in the middle of the 1949 recession seems to have stabilized aggregate investment at a time when investment in plant and equipment showed signs of slight weakness.<sup>30</sup>

### *The Nature of Inventory Fluctuations* <sup>31</sup>

Cyclical movements in inventory investment may be said to result from the lag of changes in the rate of production behind changes in demand, lags which are inherent in the structure of production, although they may vary from industry to industry. The concept of "lags" pervades all of economic literature. The type of lag referred to here is the lag implicit in the distinction between the "market period" and the "short run" generally made in price analysis. There are (varying) periods of time in each industry during which the supply of goods is temporarily fixed. Called the market period, this is a time interval during which changes in de-

<sup>29</sup> See Hansen, *op. cit.*, p. 54. All figures in current prices.

<sup>30</sup> See *Survey of Current Business*, *op. cit.*, p. 2 and *passim*.

<sup>31</sup> The following discussion leans heavily on two articles by L. A. Metzler: "The Nature and Stability of Inventory Cycles," *The Review of Economic Statistics*, XXIII (August, 1941), pp. 113-129, and "Factors Governing the Length of Inventory Cycles," *op. cit.*, XXIX (February, 1947), pp. 1-15. The reader is strongly recommended to refer to these two articles, for they constitute a very keen theoretical examination of the characteristics of inventory fluctuations. The method used is very similar to that employed by Professor Samuelson in his analysis of the interaction of the multiplier and acceleration principles, discussed in Chapter 3. Metzler also utilizes the marginal propensity to consume and the acceleration principles, plus the concept called the "coefficient of expectations" in an effort to demonstrate rigorously the role of expectations in cyclical movements.

mand are reflected primarily in changes in inventories. Outside of agricultural products, it is perhaps better to view the market period as the length of time during which the *rate of production* is fixed, since for most commodities, production is always going on, but at different rates. The short run, then, is a period of time during which the *rate of production* may be *varied*, within the limits of existing capacity. It is obviously not an easy matter to vary the rate of production, even in the short run, and the matter of inventory cycles is primarily a short-run problem. It takes time to alter production plans, to place new orders for additional raw materials, to hire additional labor, etc., with the result that increases in demand have to be temporarily satisfied out of stocks. Although it is usually somewhat easier to slow down the rate of production in response to a decline in demand, even this takes time, if for no other reason than the fact that goods in *process* must be completed to avoid total loss. It is not at all uncommon for the rate of *output* of the finished commodity to continue undiminished temporarily while the rate of *input* is being curtailed. The result is, of course, that inventories accumulate while the rate of output is being reduced in response to the fall in demand.

Fluctuations in the level of inventories are thus inherent in the economic system, for they are the product of the inability to alter the rate of production instantly in response to changes in demand. Increases in demand result, in the first instance, in declines in inventories. Then the attempt to replace depleted stocks causes income and employment to rise above the equilibrium levels determined by the propensity to consume (or save) and the *autonomous* rate of investment. In terms of our earlier analysis, this means that *induced* investment in inventories drives the national income up past the level at which, for example, the savings and investment schedules intersect, so that savings will outrun investment. The excess of savings over investment will be reflected in an involuntary rise in inventories. And because the rate of production cannot be reduced promptly, stocks continue to rise involuntarily above the normal ratio of stocks to sales. The efforts to reduce the excessive inventories then result in contraction of income and employment below the equilibrium. Inventories are gradually reduced, but often

too much in terms of the demand being generated by noninduced or autonomous investment, and the stage is set for another spurt of induced investment in inventories.

It is to be noted that such cycles may occur independently of speculation in inventories or changes in credit policies (of the type pointed out by Hawtrey); they may be merely the product of the structural lag of changes in output behind changes in demand. With this brief summary of the nature of the inventory cycle, let us now examine the behavior of inventory movements in somewhat more detail.

### *Current Output Is Geared Toward Anticipated Sales and Inventories*

Current output should be regarded as being meant for (1) anticipated sales, and (2) inventories. Production for inventories may be positive or negative, in the sense that current output may adjust at a rate below anticipated sales to allow inventories to run down (negative production for stocks), or current output may be geared to a rate above anticipated sales to allow inventories to rise (positive production for inventories). On this basis production for inventories may be taken to equal the difference between the normal level of inventories and the actual level of inventories at the close of some time or accounting period. Since businessmen order and produce to meet expected sales and to bring stocks to their normal level, the difference between actual and normal inventories at the close of this time period is the same as the difference between actual and anticipated sales of that period. Production for inventories in any given period, then, may be taken to equal the difference between actual and expected sales in the immediately preceding time period.<sup>32</sup>

<sup>32</sup> This, of course, is an oversimplification, for it leaves out the influence of *expectations*. However, for the present it is wise to defer this complication until we have mastered the analysis without the role of expectations. It should be noted, moreover, that this assumption is probably not as far removed from reality as might first seem to be the case. Despite the undeniable importance of *expectations*, and the increasing attention they are receiving from economists, there is some reason for believing that businessmen rely to an important extent on *past sales* for short-run problems, without attempting to project too much into the future. The future is uncertain. The use of past sales, on the other

### *A Hypothetical Pure Inventory Cycle*<sup>38</sup>

A pure inventory cycle is one based only on the role of the marginal propensity to consume; it arises out of the attempts of businessmen to replenish depleted inventories. We may start by assuming an autonomous increase in investment. This will raise aggregate demand via the expansion of national income, and because the rate of current production cannot be speeded up immediately to meet the increased sales, the new demand must needs be met out of inventories. If we assume that inventories were in their normal relation to sales at the time of the increased demand, it is plain that they must now be below their normal level. Businessmen will now attempt to replenish their stocks, to bring them up, that is, to their normal level.

For a time, however, these attempts to build up inventories provide the seeds for their own failure. The reason is that the increase in national income effected by the production for inventories as well as production for current sales, *plus* the multiplier effects of the increase in autonomous investment, causes sales to exceed the level estimated in producing for inventory. Thus inventories will actually decline despite efforts to increase them. However, as long as the marginal propensity to consume is less than one, sales cannot continue to rise as fast as income. We have seen in Chapter 3 that with an MPC less than one, *savings* continue to rise, until they finally equal the increment in autonomous investment (assumed to be

hand, smacks both of certainty and simplicity. To the conservative businessman there is strong appeal in pursuing the easy course of projecting into the future exactly what has happened in the immediate past.

Nevertheless, expectations cannot be ignored. Certainly, for *long-term* investments, it would be disastrous to base estimates of the marginal efficiency of capital solely, or even largely, on events of the past. Even in the case of short-term investments, however, it is evident that businessmen will tend to be more optimistic if sales are increasing at an increasing *rate* than they would be if sales were increasing at an obviously decreasing rate.

<sup>38</sup> By a "pure" inventory cycle we mean one in which no allowance is made for the role of expectations plus the role of the acceleration principle or relation. We shall observe later, however, that the more optimistic or pessimistic businessmen are about a *continued* change (up or down) in sales, and the larger the value of the relation, the larger will be the amplitude of the cycles, unless low values of one of these and/or low values of the marginal propensity to consume act as an offset to high values of the other(s).

maintained from period to period). The same type of process is in evidence here. With the gradual rise in savings, actual sales come to exceed estimated sales by less and less (*i.e.*, sales will increase at a decreasing rate). Hence the amount of production for inventories, while positive, will diminish; national income, therefore, will increase at a decreasing rate. The combined decrease in the *rate of growth* of both national income and sales, however, will permit, at an *increasing* rate, the accumulation of inventories. Finally, actual sales will fall below anticipated ones, and stocks will thereupon rise above their normal level.

Businessmen will now attempt to reduce their stocks, to get rid of the excess over and above the normal level. The attempts to reduce stocks will lead to a fall in national income, as production for inventories is curtailed. In fact, production for inventories will be *negative*, current production being less than anticipated sales, in order to cut inventories. (But even production for current sales will decline, under the pressure of pessimism engendered by the unexpected excess of actual over anticipated sales. Overestimates of sales in one period, that is, will damp expectations concerning sales in future periods.) The decline in income generated by curtailed production will cause actual sales to be less than expected sales, with the inevitable result that attempts to reduce inventories are frustrated. Production will now be curtailed still more, because inventories continue to rise above their normal level, despite the attempts to reduce them.

As long as the marginal propensity to consume is less than one, however, the decline in income will not, cannot, continue indefinitely. As income falls, consumption will **fall** by less. At some point, therefore, with producers continuing to **produce** less than expected sales in an effort to get rid of **excess** inventories, current production will fall below actual sales, and inventories will begin to be reduced. As long as stocks remain above the normal level, production will continue to be less than sales, and national income will continue to decline. Once inventories reach their normal level, the declining sequence in production and income will cease. Production will now be expanded to *equal* current sales and *maintain* inventories at their normal level. But the rising income which fol-

lows from the increased production will now frustrate the efforts to maintain inventories, and the cycle will repeat itself. Each time, however, the amplitude of the cycle gets smaller.

The foregoing analysis is pictured in Table 12 below. In Table 12 period 1 shows a position of equilibrium. Normal in-

**Table 12 Result of Attempts to Maintain Inventories: The Pure Inventory Cycle (MPC = 0.6) \***

| (1)<br>Period | (2)<br>Production<br>of Con-<br>sumer's<br>Goods for<br>Sale | (3)<br>Production<br>of Con-<br>sumer's<br>Goods for<br>Stocks ( $\pm$ ) | (4)<br>Autonomous<br>Investment | (5)<br>Income<br>Produced<br>(1) +<br>(2) + (3) | (6)<br>Sales | (7)<br>Inventories<br>at Close of<br>Period |
|---------------|--------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------|-------------------------------------------------|--------------|---------------------------------------------|
| 1             | 600                                                          | 0                                                                        | 400                             | 1000                                            | 600          | 500                                         |
| 2             | 600                                                          | 0                                                                        | 500                             | 1100                                            | 660          | 440                                         |
| 3             | 660                                                          | 60                                                                       | 500                             | 1220                                            | 732          | 428                                         |
| 4             | 732                                                          | 72                                                                       | 500                             | 1304                                            | 782          | 450                                         |
| 5             | 782                                                          | 50                                                                       | 500                             | 1332                                            | 799          | 483                                         |
| 6             | 799                                                          | 17                                                                       | 500                             | 1316                                            | 790          | 509                                         |
| 7             | 790                                                          | - 9                                                                      | 500                             | 1281                                            | 769          | 521                                         |
| 8             | 769                                                          | - 21                                                                     | 500                             | 1248                                            | 749          | 520                                         |
| 9             | 749                                                          | - 20                                                                     | 500                             | 1229                                            | 737          | 512                                         |
| 10            | 737                                                          | - 12                                                                     | 500                             | 1225                                            | 735          | 502                                         |
| 11            | 735                                                          | - 2                                                                      | 500                             | 1233                                            | 740          | 495                                         |
| 12            | 740                                                          | 5                                                                        | 500                             | 1245                                            | 747          | 493                                         |
| 13            | 747                                                          | 7                                                                        | 500                             | 1254                                            | 752          | 495                                         |
| 14            | 752                                                          | 5                                                                        | 500                             | 1257                                            | 754          | 498                                         |
| 15            | 754                                                          | 2                                                                        | 500                             | 1256                                            | 754          | 500                                         |
| 16            | 754                                                          | 0                                                                        | 500                             | 1254                                            | 752          | 502                                         |
| 17            | 752                                                          | 2                                                                        | 500                             | 1250                                            | 750          | 502                                         |

\* Source: Metzler, "The Nature and Stability of Inventory Cycles," *The Review of Economic Statistics*, XXIII (August, 1941), p. 113.

ventories are taken to be 500, and 500 is the figure prevailing in period 1. Hence current production is designed to meet only current sales, assumed to be 600, production for inventories being zero. Autonomous investment in period 1 is assumed to be 400; thus national income, which is the sum of current output for sales, plus production for inventories (*i.e.*, *induced* investment—*plus* or *minus*), plus autonomous investment, is equal to 1000. Now assume that in period 2 there is an increase of 100 in autonomous investment; this raises the national income in period 2 to 1100. With a marginal propensity to consume of 0.6, the amount spent on consumption

(sales) will now rise from 600 to 660. However, because the current rate of production cannot be adjusted immediately, that is, in the same period, 2, the increase in sales must be met out of inventories. Inventories thus fall below their normal level of 500 to 440. In period 3 current production for sales is assumed to have had time to rise to the new level of sales; in addition, production for inventories is now raised from zero to 60, the amount by which inventories are below their normal level. With autonomous investment maintained at 500, the national income in period 3 rises to 1220. But this level of income will result in a level of sales above that anticipated, for with an MPC of 0.6, sales will run at the rate of 732 per annum, above the rate planned in the current production for sales.

The reason that actual sales are greater than anticipated, of course, hinges on the induced investment in inventories plus the secondary effects of the 100 increase in autonomous investment, in period 2. Since sales are running at a higher rate than the total of current production both for sales and for inventories (current production being 720 and sales 732), inventories decline some more (by 12) below their normal level, despite the attempts to increase them.

We have seen, however, that with a marginal propensity to consume of less than one, the efforts of businessmen to replenish their inventories cannot be thwarted indefinitely. The marginal propensity to consume being 0.6 in this example, savings gradually rise from period to period. Ultimately, they will equal the increments in investment. But in the meantime, the rise in savings will cause actual sales to exceed anticipated sales by successively smaller amounts. Thus in the second period the difference between actual and expected sales was 60, and in the third period 72. But in the fourth period, under the pressure of rising savings, the difference falls to 50, in the fifth to 17. It is evident that businessmen finally do become successful in raising their inventories back to normal. After the third period, the decline in inventories ceases, and inventories start to rise again.

As the difference between actual and expected sales gets smaller, production for inventories will get correspondingly smaller, remain-

ing positive, however. This means that the national income, while continuing to rise, will do so at a diminishing rate. This will slow down the rate of increase in sales even more (than they would based only on an MPC of 0.6), so that inventories will now rise at an increasing rate. Finally, in period 6, under pressure of the declining production for inventories, national income falls below that of period 5, and actual sales turn out to be *less* than anticipated. At this point stocks rise *above* their normal level.

In period 7 production for inventories is seen to be *negative*, indicating that businessmen are now trying to reduce their stocks and bring them *down* to their normal level. But period 7 shows their efforts to be frustrated, and again, their own actions are the source of their frustration. For the lowering of current output below current sales in order to reduce stocks inevitably results in a decline in national income and, therefore, demand or sales. The figures for period 7 show, as a result, actual sales continue to fall short of expected sales, so that inventories continue to rise. However, as before, the fact that the marginal propensity to consume is less than one prevents the situation from feeding upon itself and keeps a runaway deflation from developing. Comparison of columns (5) and (6) reveals that consumption falls less than national income. As a result, the attempts to reduce inventories finally do succeed, and in period 8 stocks are seen to fall below the level of period 7. As national income continues to decline under the pressure of negative production for inventories, actual sales continue to be less than current production, but because consumption falls by less than the fall in national income, the difference between actual and expected sales grows less and less. Finally, as stocks approach their normal level, and therefore, the negative value of production for inventories declines, the national income in period 11 rises above that of period 10 and carries with it sales, which now exceed their expected level. Inventories now drop below normal, and the attempts to replenish them start another cycle. Examination of column (4) indicates, however, that the fluctuations in national income get successively smaller and the length of the cycle shorter.



### *Some Qualifications of the Foregoing Analysis of the Pure Inventory Cycle*

The above analysis of a hypothetical inventory cycle is an oversimplification of reality, and it is time now to make some adjustments. In the first place, the analysis was based only on the marginal propensity to consume, and only on one value of this variable at that. We want to see what will happen to the cycle if the marginal propensity to consume is other than the assumed 0.6. Secondly, we assumed that businessmen desire to maintain inventories at some constant *absolute* normal level. In this way we effectively omitted the influences of the acceleration effect on the inventory cycle. For the fact of the matter is that businessmen usually maintain inventories at some constant *percentage* of sales, and the result is an acceleration effect on the inventory cycle. This, too, has to be taken into account. Finally, we considerably oversimplified the effects of expectations on the inventory cycle. We did this by assuming that businessmen always expect current and future sales to *equal* the rate of sales in the immediately preceding period, that they never consider the possibility that sales may continue to expand or continue to contract, during periods of optimism and pessimism. This assumption may also now be lifted. Let us now examine the role of the marginal propensity to consume, the acceleration effect or relation, and expectations—in that order.

### *The Effects of the Marginal Propensity to Consume on the Inventory Cycle*

The length of the inventory cycle varies *directly* with the value of the marginal propensity to consume. From the earlier analysis of the inventory cycle, the reason should be fairly clear. The upswing phase of the inventory cycle continues as long as producers increase orders and output in an effort to build up their depleted inventories. The larger the value of the marginal propensity to consume, the more out of any increase in output will be consumed, and, therefore, the less can be added to stocks out of any given increase in output. Hence the more prolonged will be the period of upswing, the period of rising incomes.

In the same fashion the downswing continues as long as stocks are above normal, and businessmen contract orders and output in order to reduce their stocks. But the larger the marginal propensity to consume, the more consumption *declines* as output is curtailed and national income falls. Hence the more difficult it is to reduce stocks; the result is a longer period of declining income than would be the case were the marginal propensity to consume smaller in value.

*Effects of the Acceleration Principle or Relation  
on the Inventory Cycle*

The acceleration effect (relation) increases both the length of the cycle and the amplitude of the upswing and downswing phases. The reason is that once the normal level of inventories is calculated as a *percentage* of current sales, rather than the fixed absolute amount assumed in our hypothetical cycle, the normal level of inventories becomes a *rising* goal during the ascending phase of the cycle and a *falling* goal during the declining phase of the cycle. It obviously takes more time to build up inventories to normal when the norm is a constantly rising relation to sales than it would if the norm were some fixed amount. In addition, national income will be pushed to higher levels under these circumstances. The same thing is true in the downswing. The acceleration effect dictates that if current sales are declining, inventories must be reduced proportionately.<sup>34</sup> The more sales decline, the more must the level of inventories be reduced; whence it follows that it is more difficult to reduce inventories to a normal level if the norm itself keeps falling. The downswing is thus both longer and deeper.

The acceleration effect, then, extends the deficiency of stocks that have to be accumulated during the upswing, and accentuates the excess of stocks that have to be removed during the downswing. The result is that the amplitude and the duration of the cycle are both increased by the acceleration effect.

As a matter of fact, the acceleration effect is likely to be stronger in the case of inventories than in the cases of durable producer and

<sup>34</sup> Assuming, as we have done throughout, that the relation is linear and constant throughout the cycle.

consumer goods. The reason is that the discussion of the acceleration principle usually proceeds on the assumption of *constant* replacement demand. In the case of durable goods this simplifying assumption may not be overly misleading. In the case of inventories, however, fluctuations in the replacement demand for stocks represent the commonality of experience and are made inevitable by the very nature of the case.

Fluctuations in the replacement demand for inventories are the unavoidable product of *unintended* changes in the level of stocks. We have seen that these unintended changes in the level of stocks are inherent in the situation produced by the lag of changes in the rate of production behind changes in demand. As long as these lags exist, unintended fluctuations in inventories will occur and, with them, fluctuations in the replacement demand for inventories. The accentuating effect that the acceleration principle has on the upswing of the inventory cycle is reenforced by the upsurge in replacement demand brought about by unintended reductions in permanent stocks. And the acceleration effects on downswings are also made stronger by the unintended increases in inventories.

Fluctuations in the replacement demand for durable goods because of unintended decreases or increases in rates of depreciation are likely to be much less frequent, particularly in the short run. It is permissible in many cases, therefore, to leave out their effects in discussions of the acceleration principle in relation to durable goods. But it is impossible to do so in the case of inventories, where such fluctuations represent the typical experience..

### *Effects of Expectations on the Inventory Cycle*

Business expectations serve to *shorten* the length of inventory cycles, and *increase* their amplitude. If businessmen are at all expectant of a level of future sales above that of the immediate past, the resulting efforts to produce to meet the future *rise* in sales will cause production and income to rise at a faster *rate* than would be the case were production for sales (as opposed to production for inventories) geared to meet a level of sales equal to that of the immediate past. This means that national income will be forced above the equilibrium level at a much faster rate, and inventories will

accumulate at a correspondingly faster rate. Thus the normal level of inventories will be achieved more quickly.

The downswing will also be speeded up and intensified by expectations. For expectations of a *continued* decline in sales will cause producers to curtail orders and production more sharply than they would if they felt that a current decline in sales would cease. The result is that income will decline at a faster rate below the equilibrium level and permit the reduction of stocks more rapidly than would otherwise be the case.

We have observed that during prosperity the expansion of demand frequently breeds expectations of further expansion. Similarly, during downswings, the contraction of sales frequently give rise to expectations of further contractions. In the light of the foregoing results of expectations, we may conclude that, *ceteris paribus*, expectations tend to reduce the length of inventory cycles and increase their amplitude or intensity.

There is some evidence, further, that the effects of the relation and expectations tend to be offsetting. Professor Metzler's calculations indicate that when the effects of both of these factors are recognized, the cycle tends to be shorter than it is when the cycle is based on the marginal propensity to consume alone.<sup>31</sup>

<sup>31</sup> See Metzler, "Factors Governing the Length of Inventory Cycles," *op. cit.*, pp. 9-10. Metzler also correctly points out that the oversimplifying assumption of the same planning period for all industry is not serious. In place of absolute production planning periods may be substituted *rates of change* of production, with the rates based on some average production planning period for the economy as a whole. (A production planning period is the length of time it takes a plant to adjust its rate of production to a change in demand. This obviously varies a great deal from industry to industry.) See *ibid.*, p. 10.

Metzler further discusses the effects of introducing *prices* into the analysis, heretofore carried on solely in terms of *physical* volume of sales. He concludes, on the basis of P. A. Samuelson's studies ["The Stability of Equilibrium: Comparative Statics and Dynamics," *Econometrica*, IX (April, 1941), since republished in Samuelson's *Foundations of Economic Analysis* (Cambridge, Mass., Harvard University Press, 1948), Chap. IX], that inventory cycles of the type analyzed are inevitable in an economy of pure competition. On the basis of widespread price rigidities which almost invariably appear as the concomitant of monopolistic elements, the emphasis on physical volume of sales is not unwarranted when the analysis is applied to an economy containing (varying) degrees of monopoly.

*Inventories May Sometimes Act as Shock Absorbers*

Without contradicting any of the foregoing, it is worthy of note that inventory movements are not only an important source of instability, but there are times when they may also be a source of stability. The discussion of expectations provides some clue to this paradox. It is not true that every increase (decrease) in demand will cause the affected businessmen promptly to expand (contract) their orders for inventories. They must be convinced that the increase (decrease) in demand will be *maintained*, and not be simply a temporary gyration.

Often restricted sectors of the economy will experience what they may feel to be a temporary change in demand, upward or downward. On this basis, rather than immediately increase their orders for inventories, they prefer to allow their inventories to absorb the temporary change in demand. For if the change is temporary, it is to be expected that the inventories will return to their normal level as soon as demand returns to its former level.

This is to say that not every change in demand is capable of setting off a cycle in economic activity, even a minor one. If this were not so, the economy would be a violently unstable one, in the sense of responding to the slightest change in any one of the determinants of national income, direct or indirect. But experience indicates that this is not the case. One of the more obvious explanations for this state of affairs is that businessmen are content to allow inventories to absorb what they consider to be only very temporary changes in demand. We should not overlook, therefore, the stabilizing role of inventories as shock absorbers, providing cushioning effects to slight movements in the economy. Of course, when changes in demand are expected to continue or at least be maintained, then the role of inventories as an important source of instability, important enough to be the basis of many of the minor cyclical movements, comes into play.

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## CHAPTER 10

### ***THE INTERNATIONAL SPREAD OF BUSINESS CYCLES***

#### **INTRODUCTION**

The manner in which business cycles spread from country to country involves a discussion which at first glance seems to be marked by simplicity, but in reality is necessarily filled with all sorts of qualifications, reservations, and pitfalls. If there is one outstanding generalization one may draw in advance, as a note of caution, it is that there is very little one can say with absolute certainty about the international diffusion of the business cycle, more so, perhaps, than is the case in discussing the behavior of a single economy.

While there is, in general, some tendency for business cycles to spread internationally, the *extent* to which they will spread, the *timing* of the spread, and the *mechanism(s)* by means of which the propagation may take place, are all fraught with uncertainty. In the first place, the extent to which an upswing or downswing in one country is diffused among other countries is strongly influenced by the size and economic diversity of the country of origin. As we shall presently see, one of the basic mechanisms through which cycles spread internationally is the increase (decrease) in imports of the country undergoing expansion (contraction). Increased imports mean increased exports to other countries, providing the latter with an expansionary force, too. Obviously, small countries absorb only a very small portion of the world's supply of most commodities; thus fluctuations in their demand for imports will not have much effect on the world demand for various commodities and hence on the exports of most countries. This is true even though small countries by dint of circumstances often spend large portions of in-

creases in their national incomes on imports. It is simply that small countries tend to have comparatively small national incomes. Large countries, on the other hand, particularly those more industrially advanced, will tend to generate enough demand for imports visibly to affect the export industries of the rest of the world with cyclical fluctuations in their demand.

However, large size itself is not a sufficient guarantee that a country will be a large importing nation. In addition to economic importance, it is necessary to take account of the relative importance of foreign to domestic trade in the country where the expansion or contraction originates. The smaller is the ratio of foreign to domestic trade, the less effect on the exports of other countries will fluctuations in the national income of the country in question have. Thus a very large but *diversified* economy might well spend the great bulk of increases in its income on domestic products, and in this way reduce the tendency of the cycle to spread.<sup>1</sup>

In general, there may be reason to expect the spread of cycles to occur more easily as an upswing gains momentum in the country of origin, because people may be expected to spend more on imports as national income rises. Nevertheless, in this case, too, there is danger of taking too much for granted. Much will depend on the extent and *nature* of specialization of the country in question. A country specializing in investment goods industries will, in the event of a boom in investment, be likely to increase its imports at a much later period in the cycle than a country specializing more in consumer goods. The same is true of booms in agrarian and industrialized nations; the former will increase their imports (of

<sup>1</sup> This latter point might be considered as having been mentioned by way of attaining completeness in a discussion of possibilities. For there appears to be no economy diverse enough to do without substantial imports. Even the United States, which undoubtedly has the most diversified economy in the world at present, makes its fluctuations felt throughout the world because of the importance of its imports of industrial raw materials. In fact, ironically enough, precisely because industrial raw materials do bulk so large in U.S. imports, fluctuations in this country ramify more easily than they do in many other cases. The reason is not only that such imports are, by their very nature, bound to be closely geared to fluctuations in the rate of industrial production, but are also subject to speculative buying and inventory fluctuations, which cause U.S. imports often to fluctuate more widely than the level of national income itself.



capital goods) at a much earlier point in the cycle than the latter.<sup>2</sup>

Finally, it is evident that, in the end, it is the fact that nations are not self-sufficient, but are, rather, interdependent, *i.e.*, specialized to a large extent, which explains why cycles tend to spread from country to country. At the same time, the fact that the various countries do not, or cannot, seek to attain complete specialization helps to explain why the various countries of the world do not always move upward and downward together. For example, it has now become a cliché to refer to the decade of the twenties in the United States as the "roaring twenties." A good bit of the expansiveness of the twenties must be traced to the high level of prosperity that characterized most of this decade. In most of the other countries of the world, however, the "roar" of the prosperity period in the United States was only a very faint murmur, most of the world, apart from the United States, being in a semidepressed state during this period. For various reasons, some of which will come to light as we proceed, the boom of the twenties in the United States did not spread to the rest of the world.

The foregoing remarks show that an analysis of the international propagation of business cycles is necessarily filled with "ifs, ands, and buts," and also set the tone of the ensuing discussion.

### THE MECHANISMS OF TRANSMISSION

The medium through which business cycles are transmitted from country to country is the foreign trade mechanism. Foremost among the various elements of the trade balance are the export and import items and capital movements. Exports and imports deal with the exchange of goods and services, exports providing the exporting countries with a source of increased demand and national income, and imports providing the outlet through which cycles may spread, but at the same time, as we shall soon see, also providing the

<sup>2</sup> It might be noted at this point that booms that are started through an increase in the demand for exports are, at the same time, fed and stimulated further by the supply of additional loanable funds (domestic and foreign) that becomes available through the sale of exports. The spread of contractions is similarly aided by the decline in the supply of funds induced by the decline in exports.

countries undergoing expansion with a damping factor to their upswings. Capital movements embrace the international movements of loanable funds—short- and long-term credit, which we have found to play a decisive role in the pattern of domestic cyclical fluctuations.

Because of certain fundamental differences in the behavior of these mechanisms under conditions of an international monetary standard like the gold standard and under those of a paper standard, the ensuing discussion will follow the traditional lines of discussing the mechanics of transmission first under the gold standard and then under paper standards. Surprisingly, perhaps, to the reader, the *former* is *more* pertinent to present-day conditions than the latter. The reason is that although most countries of the world are off the gold standard, and the United States is merely paying lip service to this standard, gold remains today the international money. To the extent that nations still pay for an excess of imports over exports with gold (rather than resort to loans, that is), much of the gold standard analysis remains relevant, albeit with many qualifications, to present-day conditions. The greatest source of difficulty that present-day conditions of paper and mixed standards provides is the wide resort to (not always predictable) political interference with international exchange mechanisms, mainly in the form of currency and exchange controls. However, at a later point, we shall examine their influence, along with tariffs, on the problem under analysis.

We shall start, first, by examining the role of imports and exports, then proceed to a discussion of the influence of capital movements, and conclude with a discussion of the various types of political interference, including the role of central banks in influencing the trade mechanisms.

### ***The Role of Imports and Exports under Gold Standard Conditions*<sup>3</sup>**

A country experiencing an upswing in employment and national income will, at some point in the upswing, begin to spend part of

<sup>3</sup> The type of gold standard conditions envisaged in the ensuing discussion are those in which bank credit is part of the nations' currency, *without* 100

the additional income on imports. It is through this effect on imports that the expansions of income and employment tend to be spread to other countries. Increased imports into one country mean increased exports from other countries.<sup>4</sup> The increase in exports will lead to an increase in income and employment in the export industries and then in the rest of the economy of the affected countries.

Under gold standard conditions, or conditions in which gold is used as international money, an increase in imports resulting in an *excess* of imports over exports in one country produces a transfer of purchasing power from this country to the countries who develop export surpluses. This transfer of purchasing power may take place through shipments of gold from the country with the deficit trade balance to the country with the surplus trade balance. Alternatively, and in the first instance, at least, most likely, the transfer of purchasing power may take place through international movements of short term capital.

In footnote 3 above, it was stated that we assume that bank credit need not vary as a constant multiple of a change in gold reserves; this assumption implies the existence of excess reserves of member banks as well as central banks. Short-term capital movements have always played, and continue to play, a very important role in international trade and exchange. They require, as a condi-

per cent reserves. And, to conform to reality, it is assumed that bank notes and demand deposits, together perhaps with government notes, need **not** vary as a constant multiple of a change in gold reserves; that is, excess reserves may exist, on the part of both member and central banks. Most discussions of the gold standard, it is true, assume, and give the impression that the **realities** of the situation were, that under the gold standard excess reserves did not exist. However, even in the heyday of the gold standard, this was not true. One of the sources of evidence in testimony to this fact was the existence of short-term capital movements *in lieu of* gold flows. Short-term capital movements were and continue to be important as means of transmitting cycles from country to country, as we shall presently see, and they cannot take place without excess reserves on the part of the member banks or central banks.

<sup>4</sup> If at the same time prices are rising in the country whose national income is expanding, exports from this country may also decline because of their higher prices relative to those of other countries selling the same products. In addition, the rising prices may also add to the pressure on imports, as consumers, etc., turn from domestic to cheaper foreign products. These effects heighten the effectiveness of the mechanism of transmission discussed in the following paragraphs.

tion of occurrence, however, the existence of excess reserves on the part of member banks, central banks, or both. Such being the case, the aforementioned assumption was necessary in order to bring the present discussion into as close accord with reality as possible. Short-term capital movements play such an important role in the international transmission of the business cycle, both under gold standard conditions and those of paper standards, as well as the mixed type that exists today, that it is worth our while to interrupt the main current of our discussion to examine briefly the mechanics of these capital movements.

### *A Digression on Short-Term Capital Movements*

The means whereby gold movements come about and the effects of the gold movements are rather simple. Gold flows out of a country having an import balance of trade, as the various types of foreign exchange houses and banks ship gold abroad to replenish their balances against which they write the drafts they sell to domestic importers. Unless the central banks intervene to offset their effects, the gold movements will effect a contraction of credit in the country out of which the gold flows and an expansion of credit in the country having the export surplus.<sup>5</sup> Before gold movements take place, however, under the gold standard and under present-day mixed standards, short-term capital movements, involving no gold flows, often occur.

Short-term capital movements take place in many forms.<sup>6</sup> The banks and other foreign exchange houses of the country with the import surplus (hereafter designated as I) may attempt to replenish their foreign balances by purchasing some of the central bank's reserves of foreign exchange, which the latter is likely to hold among

<sup>5</sup> Because of the possibility of the gold movements' merely depleting excess reserves in the one country and building them up in the other, it is impossible to estimate the extent to which credit will contract and expand in the respective countries. Much will depend on the stage of the cycle in the countries involved and the actions of the central banks. More of this later.

<sup>6</sup> The following discussion of short-term capital movements will of necessity be brief, being meant only as a refresher for the reader already familiar with the mechanics of short-term capital movements. The reader who is unfamiliar with this discussion is advised to refer to almost any textbook in international trade. See especially P. T. Ellsworth, *International Economics* (New York, The Macmillan Company, 1938), pp. 196-209, and references cited therein.

its assets. Such transactions, to the extent that they are carried out by *nonbank* foreign exchange dealers will result in a contraction of demand deposits in the borrowing country. And unless those *banks* who buy foreign exchange from the central bank have excess reserves, the use of their reserves to buy the foreign exchange will result in a *multiple* contraction of credit (assuming also that the central bank engages in no open-market purchasing activities to replenish bank reserves). Thus a decline in the national income of country I is likely to occur. In the country with the *export* surplus (hereafter designated as E) it is apparent that all that has happened is a transfer of ownership of demand deposits from country I's central bank to its member banks and foreign exchange houses. A net expansion of the money income of country E is likely to occur if the balances formerly held by country I's central bank were idle. Even if this were not the case, however, an expansion is likely to result from a shift of the balances from E's money market (where I's central bank undoubtedly employed them) to use directly in the production processes following payment to E exporters; in effect this means an increase in the circuit (or income) velocity of money, which denotes a rise in national income.<sup>7</sup>

Capital movements may also be induced by the rise in discount rates that will result if the banks of country I, as a result of buying exchange from their central bank, find their reserves depleted and are forced to rediscount at higher rates or contract their loans. Foreign funds may be made available to I under the attraction of the higher discount rates there. In addition, movements of speculative short-term capital to I may take place. These occur when I's currency falls to a discount under the pressure of its import trade balance.<sup>8</sup> The more I's currency depreciates below its norm, the

<sup>7</sup> To what extent this expansion of E's national income will take the form of goods and services rather than simple money income and rising prices depends, of course, on the state of employment of E's resources and the elasticity of their supply at the time the export surplus develops there. At the very least, however, an expansion in money income in this country is likely. Contraction of money income might not develop in country I, though, if its banks and other foreign exchange houses held foreign balances much in excess of their normal needs.

<sup>8</sup> The import balance of I causes an excess of its exchange to appear on foreign markets over the demand for it to pay for I's exports. Looked at from I's point of view, there are more importers demanding foreign exchange than

stronger the expectation that it will rise again. Foreign exchange dealers, including banks, in other countries then buy I's exchange in the hope of being able to sell it later on at a higher price. Since the mechanism by which speculative capital movements and those occurring in response to higher interest rates take place are identical, as is their results on the lending and borrowing countries, we shall examine them under the heading of *international borrowing*.

Let us once more picture the situation. Country I has an import balance of trade with country E (which may, incidentally, include one or more countries of the rest of the world). The consequence is that banks and other foreign exchange dealers in I exhaust their foreign balances, against which they sell bills of exchange to I's importers. The initiative for supplying I with additional short-term capital may come from banks and other foreign exchange dealers in I or from banks and dealers in E. In either event, such short-term capital movements require a net expansion of credit on the part of banks in country E and thus a *rise* in its national money income. Country I may experience a contraction of bank credit, or at the very least, a decline in the income velocity of money, and hence a *fall* in its national income.

If the banks and dealers in I take the initiative in bringing about the international short-term loan, the procedure is as follows. They will draw up drafts on exchange dealers or banks in E, and send them to E to be discounted, with the proceeds to be deposited in agent banks in E under the accounts of I's banks and dealers. The funds are made available in E through the money market in E. Either foreign exchange brokers in E accept the drafts drawn up in I and discount them at commercial banks in E, or the commercial banks in E discount the drafts directly themselves. The incentive to discount I's drafts stems from the higher rate of discount on them than on E's domestic bills. In either case, it is necessary to see that the foreign loans made to I entail an expansion of bank credit on the part of the banks in E, and, consequently, an expansion in E's money income. In I there will probably be a contraction of money income. The purchase by importers of foreign exchange from **banks**

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there are exporters supplying it, forcing foreign exchange to a premium in I's foreign exchange markets.

in I will result in a contraction of demand deposits, unless financed from hoarded balances. Although the banks in I are apt to relend the extinguished demand deposits (since the reserves are unchanged), there is a good chance that the banks will now lend them out on the money market, and such transactions have a tendency to reduce the *income* velocity of money; as a result, the national income in I will fall.

It is possible, also, for the banks in E to initiate the capital movements. As the fall in the foreign exchange value of I's currency continues, under the pressure of its import trade balance, the speculative value of accumulating balances of I's currency rises, for the stronger is the chance that the currency will begin to rise in value again. This is particularly true under the gold standard, where the decline in the rate of exchange is limited by the gold export point. Under paper or mixed standards, such capital movements are conditioned, more or less, by the existence of stable exchange rates. In the presence of world-wide programs to maintain stability in the various countries, fluctuations in the exchange rates of paper currencies should be greatly reduced. Furthermore, many countries of the world operate "exchange stabilization" funds whose function it is to keep such fluctuations to a minimum.

Similarly, if several paper-currency countries adopt the principle of an *exchange standard*, with the central bank or some other appropriate agency in all but one country (the reserve country) standing ready to buy or sell the currency of the reserve country at a fixed price, fluctuations in exchange rates as between this group of countries would be ruled out. . . .<sup>2</sup>

The world famous "sterling bloc" provides an excellent example of this type of arrangement. Thus even under strict paper standards, and certainly under the present-day mixed standards, short-term capital movements, of the speculative type ~~we are~~ now discussing (as well as the kind arising from disparities in discount rates in different countries), are often a very important part of the international scene.

As the fall in the foreign exchange value of I's currency continues, therefore, banks and foreign exchange dealers in E may be

<sup>2</sup> Ellsworth, *op. cit.*, p. 256.

expected to increase their holdings of I's currency, in the hope of selling it at a later point for a higher price. In so doing they provide a market for the excess foreign exchange arising from the export trade balance in E. As in the case of capital movements taking place in response to the relative differences in discount rates in I and E, it is to be noted that the banks in E buy the excess foreign exchange in E by *expanding their demand deposits*; this expansion obviously raises the national money income in E by approximately the same amount. E's banks and dealers will remit the foreign exchange they have acquired from exporters in E to agent banks in I for collection, leaving the proceeds on deposit with the agent banks. This means a transfer of ownership in deposits in I from importers in I to the accounts of E's banks and foreign exchange dealers. The result, like the earlier cases, is likely to be a decline in the income velocity of money in I, as money is withdrawn from the nonfinancial markets in I, to be employed, most likely, by E's banks in the money markets of I. Hence the national income in I may be expected to decline somewhat.

Thus we see, in summary, that short-term capital movements almost invariably involve an expansion of bank credit on the part of country E and a rise in its national money income.<sup>10</sup> In order for banks in E to discount I's bank drafts or acquire directly balances of I's currency it is necessary for them to create demand deposits. This can be done only if E's banks have excess reserves or if they can discount some of the foreign exchange at the central bank of E and acquire additional reserves.

In countries with import balances, capital movements are likely to result in a downward pressure on national income, as I's banks are either forced to contract demand deposits outright, or, in the case of international borrowing, a contraction of the income velocity of money results from a shift of I's money from industrial use to use in money markets. An injection of new money occurs, then, in countries developing an export balance of trade, while a contraction of

<sup>10</sup> One possible important class of exceptions to this remark is the case where a country with an import trade balance obtains additional exchange of the countries with whom this trade balance exists by resorting to money markets in other countries. In this case a monetary expansion results in countries other than E.



money income or (equally important from the standpoint of our central problem—the transmission of business cycles) a slowing down of an upswing will probably take place in countries of import surplus. It should also be remembered that when capital movements fail to provide the necessary foreign exchange to “I” countries, they will ship gold to “E” countries. This is as true today, with countries on all varieties of paper standards, as it was in the era of the gold standard. The difference, not always as great as some writers make out, lies in the more unpredictable behavior of central banks in their pursuance of policies often designed to offset the influence of gold movements. In the absence of these offsetting policies, gold movements provide a more potentially powerful injection into “E” countries and a more powerful deflationary force in “I” countries.

### ***The Role of Exports and Imports Again—Gold Standard Conditions***

We have noted that an upswing in national income in one country will probably lead to increased expenditures on imports on the part of this country (I). But increased imports on the part of one country mean increased exports on the part of other countries. Under gold standard or similar conditions, the excess of imports over exports on the part of country I is likely to lead to short-term capital movements from countries E to I, or, these failing or being insufficient, gold will flow from I to E. In either event, it is apparent from previous discussion that there will be net expansion in the national money income in E. The expansion will first make itself felt, of course, in the export industries of E, where there will now be an expansion of employment and income.

Harking back to the discussion of the multiplier concept, the reader will recall that an injection of new money into the national income stream has secondary repercussions. That is, the initial recipients of new money income (in this case those factors employed in the export industries of E) will *respond* some of their new incomes on consumption. These expenditures will mean additional income to others employed in consumption goods industries in E, who will also ~~spend~~ part of their increased incomes, and so on. It

is possible for us to employ the multiplier concept in our analysis of the international transmission of business cycles. The name usually given the multiplier concept in international trade analysis is the *foreign trade, or export, multiplier*.

*The Foreign Trade Multiplier.* The increase in the exported goods of country E will, as we have stated, lead to an expansion in E's national money income. The increased exports lead to an injection of new money in E equal approximately to the value of the rise in exports. Country E's national income, however, will rise by more than the initial injection of new money into its money stream. The reason is that a multiplier effect will develop, because the successive income recipients are likely to respond at least part of their additional incomes. In the absence of international trade, that is, assuming a closed economy, as we did in the multiplier discussion of Chapter 3, the size of the multiplier varies directly with the marginal propensity to consume (or inversely with the marginal propensity to save).

In computing the foreign trade multiplier, that is, in evaluating the effects on national income of an excess of exports, we have to take account of more than the marginal propensity to consume. For just as the people in I, where the upswing started, spent part of their additional incomes on imports, so we may expect people in E to spend some of their additional incomes on imports. The ratio (increase in imports) (increase in income) is known as the *marginal propensity to import*. Because a portion of the increment in income will be spent on imports, the value of the multiplier depends not only on the marginal propensity to consume (MPC) but also on the value of the marginal propensity to import (MPI). Hence the formula for the multiplier should really be:  $k = 1/[1 - (MPC - MPI)]$ .<sup>11</sup> The multiplier,  $k$ , may stand for the investment multiplier or the presently discussed foreign trade multiplier. The difference is merely that the former refers to an initial expansion arising out of an increase in domestic investment, while the latter refers to an

<sup>11</sup> Mathematically, the treatment is as follows: MPI is  $\Delta M/\Delta Y$ ,  $M$  standing for imports and  $Y$  income,  $\Delta$  standing for changes (increments or decrements). Without the marginal propensity to consume,  $k = 1/(1 - \Delta M/\Delta Y)$ . With the marginal propensity to consume,  $k = 1/[1 - \Delta C/\Delta Y(1 - \Delta M/\Delta Y)]$ , which equals  $1/[1 - (\Delta C/\Delta Y - \Delta M/\Delta Y)]$ .

initial expansion in the money stream arising out of an excess of exports over imports.

In illustration of the foreign trade multiplier, let us assume an increase in country E's exports of \$1,000,000 per annum; this will mean an injection of new money in E of about \$1,000,000 per annum.<sup>12</sup> Let us assume, further, that MPC equals  $\frac{1}{2}$ , and MPI equals  $\frac{1}{6}$ . Thus  $k = 1, [1 - (\frac{1}{2} - \frac{1}{6})] = 1 (1 - \frac{1}{3}) = 1\frac{1}{2}$ . Thus, when we take account of the effects of the fraction of increments in income spent on imports in E (i.e., MPI), the size of the foreign trade multiplier is  $1\frac{1}{2}$ ; in this case, the rise in E's income would be \$1,500,000. Without MPI, the multiplier would have been 2 and the rise in E's income \$2,000,000. It is apparent that although a sudden increase in exports over imports will cause national income to rise by some multiple of the export surplus, the size of the multiplier will be reduced not only by the tendency to *save* part of the increment in income (MPS), but also by the tendency to spend part of the increment in income on imports.

The formula  $k = 1, [1 - (MPC - MPI)]$  should be taken only as an approximation of the true multiplier effects of an excess of exports over imports. Some of the reasons for this have been discussed in Chapter 3, in the discussion of the multiplier there. In addition to the reasons given there, the reader should keep in mind the fact that MPI is not likely to be the same over the entire cycle in any country, and it may behave quite differently in different countries for similar periods of the cycle. We have also omitted from the discussion the manner in which the portion of the increased income saved is disposed. The answer involves in part a discussion of the acceleration principle. However, we have seen that for most probable values of the "relation," the acceleration effect will induce fluctuations in the path of the growing national income, but it will not affect the ultimate level given by the multiplier alone.

<sup>12</sup> If the excess of exports from E is paid for by I in gold, then the money supply is likely to rise by a multiple of \$1,000,000, in accordance with our initial assumptions of fractional reserve banking systems in the countries under consideration. The size of the multiple is rather unpredictable, however, as we have noted before. The central banks may sterilize a part of the gold inflow, for one thing, and the member banks themselves may be content to permit some of the increase in their reserves to take the form of excess reserves, for another.

At the same time, there is a category of induced investment which exists apart from that associated with the acceleration principle. This category of induced investment results simply from a higher *level* of income, rather than a rise in the *rate of increase* of income as in the case of acceleration effect. Thus if a higher level of national income induces more investment, at least part of the savings heretofore ignored in the multiplier discussion will enter the income stream, raising the national income to a higher level than is indicated by the foreign trade multiplier alone. Moreover, if gold imports cause banks to make credit terms easier (by reducing interest rates and other requirements associated with loans), more induced investment may take place because of easier borrowing terms, and the national income in E may be raised still further above the level indicated by the multiplier effect.

Another omission in the discussion of the foreign trade multiplier is the exclusion from the analysis of certain other factors bearing on the size of the foreign trade multiplier in country E. We have ignored the repercussions in I, the country where the upswing originated. For as far as E is concerned, a high marginal propensity to import on the part of I will not only provide the basis for the spread of the upswing in I, but will also offset, in part, the importing propensities of the people of E, so that the rise in E's income will be somewhat larger than appears to be the case when the imports of I are ignored. E's income will also be influenced by the value of I's marginal propensity to save. The larger the size of I's MPS, the smaller the offsetting effect on E's importing propensities of I's marginal propensity to import.

We should not forget to examine the effects on country I of the foreign trade multiplier. It is, remember, the tendency of people in I to spend part of additions to their incomes on imports that provides the basis for the spread of, say, an investment boom from I to other countries (E). However, it should be remembered, too, that while it is this importing propensity that transmits the expansion process abroad, the expenditures on imports in I are leakages from I's income and reduce the multiplier effect on I's income of the expanding investment there. The extent of this leakage in I's income depends, of course, on the marginal propensity to import in I. It is the size of

the MPI in a country undergoing an investment boom that determines the speed with which the boom will be transmitted abroad; the larger the MPI, the faster is the rate of transmission. At the same time, however, the larger is the leakage on imports in I, the stronger is the damping effect on the growth of I's income.<sup>13</sup>

### *The Role of Imports and Exports—Paper Standard Conditions*

Unlike the situation under gold standard conditions, cyclical fluctuations can be transmitted from country to country under paper standard conditions only if short-term capital movements take place. Under the gold standard, or conditions where gold is used in international trade, as is the case today, short-term capital movements failing or being insufficient, gold movements provide the mechanism of transmission. Since no gold is used under strict paper

<sup>13</sup> However, the propensities to import in other countries (E) while acting as leakages to the multiplier effects of the expansion of exports there, also offset somewhat the damping effect on I's income of the importing propensities of its own nationals. For an excellent and detailed discussion of the foreign trade multiplier, from the point of view of countries I and E both see F. Machlup, *International Trade and the National Income Multiplier* (Philadelphia, The Blakiston Company, 1943), especially Chaps. II-VII. Professor Ragnar Nurkse and others have also pointed out that while it is the value of its marginal propensity to import that determines the relative strength of the impulses that a country transmits abroad, the percentage change in a country's imports may be greater or less than the relative change in the country's national income. This means that the amplitude of fluctuations in a country's imports may be greater than the amplitude of the fluctuations in its income. The amplitude of the fluctuations in imports associated with fluctuations in a country's income is determined by the "income elasticity of demand for imports." This income elasticity of demand for imports is defined as  $(\Delta M / \Delta Y) \cdot (M / Y)$ , i.e., the marginal propensity to import divided by the average propensity to import (API). Thus a country may have a high MPI, but have a relatively steady demand for imports if API is still larger. This is the case with England, and is explained by the fact that her imports consist mainly of foodstuffs. The United States, on the other hand, while having a relatively small MPI, has a still smaller API, so that its income elasticity of demand is relatively large. Its imports thus fluctuate more widely, percentage-wise, than does its national income. The reason is that its imports consist largely of industrial raw materials. A relatively high income elasticity of demand for imports on the part of a given country makes for more cyclical instability abroad than a comparatively low one, particularly, when the country is as large as the United States is. This is one reason why it is so important that the United States reduce the fluctuations in its national income; such a reduction would aid immeasurably in the attainment of stability abroad. Cf. R. Nurkse, "Domestic and International Equilibrium," in S. E. Harris, ed., *The New Economics* (New York, Alfred A. Knopf, 1948), pp. 270-271 and *passim*.

standard conditions, short-term capital movements are the only means by which cycles can be transmitted. The manner in which these capital movements effect this transmission has already been described; the analysis is the same as that discussed under gold standard conditions.

Without short-term capital movements, the movements in exchange rates under paper standards effectively estop the process of transmission. For example, assume an investment boom to occur in I. Depending on its MPI, I's imports will rise to some extent. But this increase in imports over exports will cause the foreign exchange rate in I to rise; I's currency will now be at a discount, while foreign currencies will be at a premium. Such a movement in exchange rates has the effect of raising the price of imports in I, causing them to fall again there. At the same time, the prices of I's exports abroad will be cheaper, and exports from I will increase. Thus any expansion of exports in foreign countries is halted and offset by a rise in imports in these countries, as a result of the fall in the price of I's currency. In the end, the expenditures of I on foreign goods will be offset by an equivalent expenditure of these countries on I's goods. Furthermore, *there has been no transfer of purchasing power*, indispensable if the expansion in I is to be transmitted abroad, for, short of capital movements, there is nothing in the foregoing that provides the basis for a net injection of new money into the national income stream of the foreign countries or net contraction in I's money stream. Without capital movements, exporters in E would have no banks or foreign exchange dealers to whom to turn for the sale of exchange representing the excess of exports in these countries. The foreign exchange rate would simply fall until exports were reduced, imports in these countries increased, and the two brought into equality.

*A Qualification.* Actually, this case is a bit overstated. In the absence of short-term capital movements, the effects of an increase in demand for imports in country I may be likened to a shift in composition of aggregate demand in I, or what we have called a horizontal shift in demand. This follows from the rise in I's exports following the decline in the exchange value of its currency. Thus although a certain amount of domestic demand in I has been di-

verted to foreign imports, the latter is finally matched by an increase in demand for I's products abroad. Hence the *aggregate* demand for I's goods is unchanged, although its composition has altered in favor of I's export industries. The same analysis would follow in the case of a country whose exports declined due to recession abroad (if, again, there were no capital movements). The ensuing fall in its imports, following the rise in foreign exchange rates, would result in a shift in the composition of its aggregate demand in favor of domestic industries.

The statements made earlier, that without short-term capital movements country I would experience no change in its national income, assumed no inflationary or deflationary effects from the shift in resources from domestic to export industries. Whether this is true depends, for example, on the relative amounts of investment required in the two categories of industry. If the export industries require more investment, the net effect is almost sure to be expansionary. If the opposite is true, there is a possibility that the net effect may be deflationary, but not necessarily. We have discussed this problem at other points in this book, and there is no need to repeat the discussion here.<sup>14</sup>

The same type of analysis holds in the case of a country which suffers a decline in its exports. However, although this is true on a priori grounds, the present writer is inclined to the opinion that unless this happens while the affected country is in a state of rigorous cyclical expansion, the shock to confidence may well prove contractionary, even though there is no loss of purchasing power to foreign countries. The reasons for this, again, are elaborated on elsewhere in the book.<sup>15</sup>

As yet this case remains purely hypothetical, for gold does move in international trade. Thus the discussion of gold standard conditions is the relevant one for the problem under consideration. Some modifications of the gold standard discussion are necessary, however, and these will be made in due time. Right now, let us turn to a consideration of the role of *long-term* capital movements in the transmission of the business cycle internationally.

<sup>14</sup> See Chapter 3, pp. 112-113, Chapter 6, pp. 214-215, and Chapter 11, pp. 382-383.

<sup>15</sup> See Chapter 11, pp. 382-383.

*Long-Term Capital Movements: The Role of Foreign Investment in the Propagation of Business Cycles—Gold Standard Conditions*

In virtually all cases, long-term capital movements will facilitate any expansionary movement in the capital *importing* country (or slow down a contraction there). If spent in the capital importing country, these capital movements obviously add to the total monetary demand there. But even if the proceeds of these loans are not spent in the capital importing countries (a strong possibility), the loans add to the supply of loanable funds there, either lowering the interest rate or slowing down its rate of increase. Put somewhat better, perhaps, capital imports forestall a possible general tightening of credit conditions in the importing country.

The effect of long-term capital movements on the capital *exporting* countries is somewhat uncertain. If the proceeds of such loans are spent in the lending country, there is little doubt that the results will be stimulating to the lending country, particularly, if the supply of loanable funds is ample in these countries. These loans represent an increase in the rate of investment in the lending countries, in the form of foreign investment, which is one of the categories of total investment. Excellent examples of the stimulating effects of such loans are provided by the United States during the 1920's and the late 1940's. In both periods, no small part in the booms of these periods was played by high levels of foreign investment going on, with the proceeds being largely spent in the United States.<sup>10</sup>

Loans spent elsewhere than in the capital exporting country may be deflationary to this country. This follows from the fact that these loans reduce the supply of loanable funds available in the lending country. The resulting rise in interest rates and the general tightening of credit conditions in the capital exporting country would then have the effect of shortening an upswing or accentuating a downswing, whichever was taking place. However, the extent of this effect is largely dependent on the supply of funds available at the time the foreign loans are made. If these are ~~ample~~ **ample** in the

<sup>10</sup> Put somewhat differently, the United States financed its very large volume of exports during the twenties and forties by its large capital loans to the countries doing the importing.



capital exporting country, the deflationary effects in this country will be small, if any. For example, if capital is exported during a depression to a country having a boom, it will facilitate the boom without causing any serious shortage in the supply of funds in the lending country, since these are apt to be plentiful during depression periods. Thus the period of the cycle when foreign loans are made is an important consideration in evaluating the effects on the lending country.<sup>17</sup>

There is a tendency for capital movements to lengthen periods of expansion and depression. That is to say, cyclical expansions and contractions would tend to be shorter in the presence of less capital movements. If additional capital were not to be had during periods of expansion, upswings would tend to be somewhat shorter in duration. By the same token, the less prone capital is to leave a country during depressions, the lower interest rates would be and the less stringent would credit conditions in general tend to be in the depressed countries.<sup>18</sup>

The effect of capital movements on the business cycle of a

<sup>17</sup> Even in the case where some deflationary effects are felt in the capital exporting country, these will be offset somewhat by the increase in exports of the capital exporting country that always accompany foreign loans. (This effect is completely apart from the question whether the proceeds of the loan are spent in the lending country.) *Ceteris paribus*, an increase in foreign loans on the part of any country causes the foreign exchange rate of that country to rise, that is, the lending process causes other currencies to rise in value relative to the one of the lending country. This makes the exports of the lending country cheaper in foreign countries and results in an expansion of the lending country's exports.

<sup>18</sup> As Professor Haberler has noted, this statement properly applies only to situations where there are differences in the relative intensity of prosperities and depressions in the different countries of the world. Thus if one country were experiencing a stronger boom than another, limitations on capital movements to the former country would act as a restraining influence on its boom. However, the country whose upswing is less vigorous would benefit and find its upswing prolonged by the limitation on the drain of capital from it. In the same manner, more depressed countries are likely to benefit from limited capital movements, while the less depressed ones would suffer, for capital would tend to flow from the former to the latter. Cf. Haberler, *Prosperity and Depression* (Lake Success and New York, United Nations, 1946), p. 420.

<sup>19</sup> Sometimes, however, a country in the throes of a chronic depression may well experience a stimulating influence as a result of making foreign loans. Under the circumstances, the supply of loanable funds is likely to far exceed the demand, so that no tendency toward credit stringency is likely to follow capital exports. But since capital exports invariably result in increased "good" exports, some stimulating effect is almost bound to occur in the lending country.

country is also influenced by its long-run credit position. Countries which are borrowers (immature debtor nations) are likely to find their downswings accentuated when a cyclical downswing has attained world-wide dimensions. The marginal efficiency of capital being low the world over in these circumstances, there is likely to be little foreign investment on the part of any country. Immature debtor nations, who are largely dependent on foreign funds for investment, are apt to suffer from a severe shortage of loanable funds as a consequence, with the resulting stringent credit conditions greatly intensifying the depressive forces in these countries. Countries who are normally capital lenders (mature creditor nations) may benefit by the increased supply of loanable funds made available domestically by the curtailment of foreign lending since, at the very least, credit conditions will tend to be eased somewhat by the added supply of funds. An important exception to this statement arises in cases of countries in the midst of chronic depressions (see footnote 17). On the whole, it is probable that the depressive effects on borrowing countries are greater than the stimulating effect on lending countries.

***Long-Term Capital Movements: The Role of Foreign Investment in the Propagation of Business Cycles—Paper Currency Conditions***

Capital movements may exercise the same effects under paper currency conditions as they do under gold standard conditions. However, further possibilities arise under paper standards because of the absence of specie movements under these conditions.

A country experiencing a boom, or a greater expansion relative to the rest of the world, is likely to offer good opportunities for foreign investment. The flow of foreign capital to it provides the basis for extending the expansionary forces to other countries. If the proceeds of the foreign loans are spent directly in the capital lending countries, the stimulating effects of the capital movements on the capital lending countries are clear. Even if spent elsewhere, however, the loans will provide a stimulating influence on the lending countries. The reason is that under paper standard conditions, specie movements are ruled out; hence, *ceteris paribus*, the capital movements cannot reduce the supply of loanable funds in the lend-

ing countries.<sup>19</sup> Exports of the lending country are bound to increase, moreover, whether the proceeds of their loans are spent there or not. Capital exports, in the absence of fortuitous circumstances, tend to depress the exchange value of the currencies of the lending countries, with the result that exports of the lending countries are stimulated; the increased exports, in turn, may be expected to have a stimulating effect on the rest of the economy in these countries."

The countries experiencing the investment boom, to whom capital is flowing, are likely to feel a damping influence on the rate of upswing of national income. Under paper standard conditions, capital imports can take place only through an excess of imports on the part of the borrowing (capital importing) countries. As a result, there is an increase in the total amount of goods in the capital importing country, while the money supply is at the most unchanged; the result is a decline in the general level of prices. Put a bit differently, there is a diversion of monetary demand away from domestic products to the foreign imports, so that the domestic industries experience a decline in the demand for their products (at going prices). Hence if the capital importing country is experiencing an upswing in business activity, as we have been postulating, the capital imports exercise a deflationary influence on the upswing. During an investment boom, this effect will probably act merely to slow down the rate of domestic expansion and no more.<sup>21</sup>

<sup>19</sup> Not only will the supply of funds not be reduced, but if the loans are made from idle balances (or excess reserves), the effects will definitely be stimulating.

<sup>20</sup> The reader should recall that, in the presence of specie movements under gold or mixed standard conditions, these possible stimulating effects of capital loans on the economies of the lending countries may possibly be offset by the reduction in the supply of funds in the lending countries brought about by the specie movements.

<sup>21</sup> For the sake of completeness, we might mention a case suggested by Professor Haberler. This is one in which an upswing is begun in a particular country in response to a fall in interest rates. The decline in interest rates alone will induce a movement of capital *out of* the country undergoing expansion, in contrast with the case discussed in the text, where the expansion arose in response to a *rise* in the marginal efficiency of capital. Rather than acting as an instrument of transmission of the expansion from this country to others, the capital exports now act as a deflationary force on the other countries. This happens because capital is in this case flowing to the rest of the world, instead of from these areas. But capital imports require a surplus of imports into the capital importing countries. If these are not undergoing any expansion, the

*The Influence of Central Bank Policies*

Up to this point the discussion has proceeded with the (implicit and, at times, explicit) assumption that the central banks of the respective countries played an absolutely neutral role with respect to the behavior of international transactions. Perhaps the sharpest contrast offered by monetary phenomena in recent history with those of the heyday of the gold standard has been the concerted efforts on the part of central banks to neutralize the effects of gold movements.<sup>19</sup> Since the thirties the monetary authorities in the various countries have more or less followed the policy of making the domestic money supply independent of international gold movements. Monetary policy around the world has generally been directed at promoting domestic monetary stability. When gold movements have appeared to be running counter to this goal, central banks have stepped in to offset their effects on bank reserves, etc., by resorting to appropriate open market operations, and other central bank tools of policy.<sup>20</sup>

The significance for our problem of central bank policies aimed at making domestic money supplies independent of gold movements is that they create a large element of uncertainty in our analysis. The ability of cyclical movements to be transmitted internationally depends in large part on neutral (or sympathetic) central bank policies. Thus if the central bank of a country undergoing a monetary expansion, because of short-term capital outflows to, or gold inflows from, countries experiencing an investment boom, acts to offset

effect in all probability will be deflationary. (Cf. Haberler, *op. cit.*, p. 449.) However, the present writer, believing that the marginal efficiency of capital schedule is relatively inelastic with respect to the rate of interest, feels that a major boom stimulated solely by a fall in the interest rate, without an important increase in the marginal efficiency of capital is not a very likely prospect.

<sup>22</sup> It would be a far-fetched dream, however, to aver that the monetary authorities never intervened to offset the effects of gold flows during the period when international gold standard flourished in all its gilded glory. However, while such factors did at various times operate to influence the activities of central banks, there were never any long-range, consistent efforts on the part of the central banks to base their actions on this goal.

<sup>23</sup> Of course, it was the extreme contradiction between gold flows and domestic stability which forced various countries off the "pure" gold standard in the first place.

the increased money supply, the international spread of the expansionary forces may be stopped in its tracks or at least slowed down. (This might happen, for example, if the country were experiencing inflationary forces.) On the other hand, a central bank may act in *sympathy with* a gold inflow or capital outflow if these are the result of an export surplus occurring during a slump in its country. In this case, the central bank may engage in open market purchases, lower reserve requirements, etc., more than in proportion to the gold inflows, so that monetary expansion might be greater than expected from the gold movements alone. We say "might" because we cannot omit the possibilities of excess reserves and other hoarding propensities which themselves might act to neutralize the *central bank* activities.

Then there is the problem of central bank behavior in countries into which short-term capital is moving, or out of which gold is flowing. If the central bank acts to offset these movements, then this country will feel no deflationary effects as a result of them. Hence if an upswing is in progress, it may proceed unhampered; this is likely to be the case during the early stages of an upswing. The central bank in this country will act in a similar fashion during a world-wide downswing, with the country in question undergoing a less severe contraction than the rest of the world. If the country is passing through a sharp inflationary period, however, the central bank is apt to act in sympathy with the gold movements. But there is also the problem of excess reserves. If these exist in great abundance, the gold outflows may simply lead to a depletion of excess reserves, without effecting a monetary contraction at the moment, although, in the absence of central bank action, the decline in excess reserves may hinder continued expansion at a later time.

The experiences with monetary policy in the past couple of decades indicate quite clearly, however, that central bank activities are apt to be much more successful when embracing efforts to halt the spread of inflationary movements rather than deflationary ones. Moreover, the central banks themselves have often been embarrassed by the contrariness of short-term capital and gold movements. Often when raising discount rates to forestall further inflationary forces, central banks have found their actions frustrated

by an inflow of short-term capital, requiring gold imports, in response to the higher rates of discount. Similarly, capital outflows involving gold exports have at times partly nullified central bank attempts to ease deflationary forces by lowering their discount rates.

### *The Influence of "Abnormal" Short-Term Capital Movements*

Mention must also be made of the thoroughly unpredictable and disequilibrating "hot money" capital movements. These are short-term capital movements arising not from normal international trade, but from efforts of individuals to find safety in foreign currencies. These efforts are the products of attempts to find security against real or imagined threats of currency devaluation, departures from the gold standard, freezing of foreign balances, and the like. "Hot money" movements at times work in a manner completely opposed to the description of short-term capital movements given earlier in this chapter. For example, a country undergoing an upswing in business activity will at some time increase its imports relative to its exports. The result will usually be a rise in foreign exchange rates. We have asserted that this situation will result in a flow of short-term capital to this country, thus providing the basis for transmitting the forces of the upswing abroad. However, if the people of this country feel that the decline in their currency will be followed by a further decline, instead of capital flowing into this country, it may well flow out. The results would then be completely contrary to those discussed on the basis of capital inflows to a country in this situation (an upswing). In like manner, a country going through a downswing might be expected to develop an export surplus, which, in turn, would furnish the means for transmitting the downswing abroad. This assumes, however, that capital outflows or gold inflows will occur. But should the people of this country fear that currency devaluation or some such is imminent (say, as a means of stimulating exports of the country concerned), gold may flow *out* of this country on the wings of flights of capital seeking refuge in other (stable) currencies. Such an occurrence would again reverse the process that would transpire in the absence of these "abnormal" capital movements. In addition, the gold flows

into other countries, resulting from the "hot money" flights from the country in question, very likely will be sterilized, foreign central banks anticipating a possible reversal of these movements once the (real or unreal) basis for them disappears.

*The Influence of Tariffs, Currency Devaluations, Exchange Controls, Etc.*

The use of tariffs and currency devaluations by the various nations of the world to immunize themselves against the spread of the depression during the thirties has become a commonplace. The goal, of course, was the curtailment of imports by raising import prices and the stimulation of exports by reducing export prices, so as to create an export surplus with its attendant stimuli to the nation having it. The effects of an export surplus on the national income of a country we are now in a position to appreciate. A somewhat longer run goal of higher tariffs and currency devaluations during the thirties was a stimulus to domestic investment in industries producing the goods formerly imported and in industries competing with imports.

The beginning economics student is usually able to point out the flaw in the reasoning associated with the use of tariffs to stimulate the economy of any one nation. The desired results of tariffs are attainable only so long as they are pursued unilaterally or by comparatively few nations. But the difficulty is that most nations have people who understand the stimulating influences to national income of tariffs, exchange devaluations, and export surpluses. The consequence was, of course, that during the thirties all nations pursued the same goal, with the result that the goal became for most an utterly elusive mirage.<sup>24</sup> Exports also gradually fell off in all countries, as was to be expected, since, in the absence of international lending or gifts, nations can pay for imports only by exporting. Thus what was gained in the stimulus to investment in plant and equipment to produce things formerly imported was lost in

<sup>24</sup> Some nations did benefit by ending up with somewhat better terms of trade than those with which they started. The analysis of this possibility, however, we must leave to a book on international trade. There is little doubt, though, that the world as a whole was worse off in the presence of uniformly high tariffs than it had been before.

the decline in the export industries,<sup>27</sup> and everybody was worse off than before. The decade of the thirties was a decade of competitive tariff barriers and competitive exchange depreciation; it was also a decade of complete futility in the sphere of international trade.

To the extent that high tariffs and exchange depreciation are pursued unilaterally, of course, they will tend to stop or at least slow down the spread of depressions to countries resorting to these devices, at the same time perhaps intensifying the deflationary forces of countries already experiencing them (by restricting the latter's exports), provided the latter do not retaliate. Since the latter provision is the only thing that makes sense in the modern era, we may conclude that the raising of tariffs and the resort to competitive exchange depreciation will not prevent the spread of cyclical depressions; in fact, the lessons of experience in this field indicate that resort to these techniques only intensifies the deflationary tendencies for the world as a whole (by curtailing the exports of *all* nations).

However, the last statement is true only for transition periods during which tariffs are raised and currencies depreciated. If we start out with the assumption that high tariffs, etc., already exist, these remarks need to be modified somewhat. The modifications may be stated succinctly in the form of a syllogism. High tariffs, etc., all over the world tend to reduce sharply the level of exports and imports the world over. Exports and imports, however, are the basic mechanism through which cyclical fluctuations are transmitted from one country to another. Therefore, *high tariff barriers tend to reduce sharply the tendency of business cycles to become world-wide in scope*. There have been many economists who have used this line of reasoning to advocate tariffs as a means of insulating the economy of any one nation, seeking economic stability at full employment, against the cyclical instability of other countries of the world.

<sup>27</sup> Here again we have oversimplified the issues somewhat. A country may still gain in the shift of its industrial structure if the increase in investment in the new plant and equipment designed to produce the things formerly imported is greater than the disinvestment (limited to replacement) in the export industries. However, the experience of the thirties indicates, so far as abstraction of the tariff effects from other concurrent policy effects permits, that as a whole no nation reaped any real benefits in this direction, and most lost.



The tendency of high tariff barriers to jam the channels of transmission of cyclical movements internationally suggests another development of the thirties which had exactly the same effect. This development was the resort to exchange controls by many countries. The origin of exchange controls may seem somewhat paradoxical in the light of the previous discussion, particularly that of exchange depreciation. Briefly, exchange controls had their origin, principally, though not exclusively, in the efforts of some countries to keep the value of their currencies from *falling* in international exchange by *pegging* them. The result, in many instances, was an overvaluation of the currencies whose international exchange values were pegged by their governments. Exports from these countries, therefore, became relatively expensive to the rest of the world, with the result that they fell off. As exports fell off, the ability to import naturally declined. The shortage of foreign exchange resulting from the decline in exports, moreover, caused the governments concerned to ration the scarce foreign currencies in order to assure that the imports that continued would consist of "necessaries."<sup>26</sup> In addition, in order to economize on the use of whatever foreign exchange was available, these countries resorted to bilateral trading agreements with such countries as they could cajole into agreements of this sort. The essence of these agreements was the clearing of export values against import values on the part of the two countries concerned *without* the use of foreign exchange.<sup>27</sup> However, the inevitable accompanying consequence was an increasing restriction of trade to the members of the agreements themselves, to the increasing exclusion of other countries of the world, who would not enter such agreements. These results have been aptly summarized by the very descriptive term "bilateralism."

On the whole, bilateralism tends to reduce the level of world trade, because, by the very nature of the agreements involved, choices to buyers and sellers both are limited to the products of the two agreeing countries. Moreover, the overvaluation of the cur-

<sup>26</sup> "Necessaries" in many cases, like Germany, were defined as goods needed for armament programs.

<sup>27</sup> Extensive discussions on exchange controls, bilateral clearing and payments agreements are to be found in any modern textbook on international economics, together with references to the excellent literature on the subject.

rencies of the exchange control countries tends to make their products in foreign trade too expensive relative to those of countries with depreciated currencies. In addition, there is an uncertainty factor associated with the "controlled" currencies, uncertainty associated with the level of the controlled exchange rate. These factors, together with the various payment restrictions usually associated with bilateral agreements, have all tended to drive trade into fixed channels, and so severely restrict the ability of the various nations of the world to trade with each other. But we have observed that it is precisely these trade relationships among nations that provide the basis for international propagation of business cycles. Reduce exports and imports among the various countries, and inevitably, the ability of cyclical fluctuations to spread internationally is also reduced. This effect has been the chief result, so far as the problem under consideration is concerned, of exchange controls and bilateral trade agreements.<sup>25</sup>

One final point is to be noted in connection with the tendency of trade restrictions to reduce the international contagion of the business cycle. The reader will recall that a boom in a particular country tends to create an adverse trade balance. While such a balance tends to stimulate the national income of the countries whose exports undergo a sharp increase, it will be remembered that the increase in imports of the first country tends to exercise a damping influence on the upswing of that country (through the leakage on imports). Deflationary forces also tend to be offset somewhat by the expansion in exports that countries experiencing them tend to develop. To the extent, therefore, that foreign trade tends to exercise a moderating influence on cyclical fluctuations in countries where they begin, or are being experienced most strongly, *restriction of foreign trade may be said to increase the intensity and amplitude of the cycle in these countries, as well as minimize its spread.*

<sup>25</sup> This statement is in need of some modification. We might better have said that bilateralism reduces the tendency of business cycles to become *world-wide* in scope. For these systems do have the tendency to make the *member* countries much more interdependent than they would be under multilateral trading systems. Hence cyclical movements between *member* countries would actually tend to be facilitated. However, the tendency of such movements to spread beyond these countries is greatly curtailed.

As a result of the foregoing discussion of such factors as central bank policies, excess reserves, flights of capital, tariff barriers, exchange controls, etc., the reader should now be convinced that the mechanism for the international spread of business cycles is, indeed, an imprecise one. Its gears may become meshed by any one of the possibilities mentioned. The present-day state of affairs forces us to acknowledge that our earlier description of the manner in which cycles spread from country to country must be interpreted as a statement of general tendencies. Because of the various possibilities discussed above, the channels through which cycles are transmitted may become jammed at any time. The result is that sometimes the propagation of cycles may be effectively halted or slowed down, while at other times it may be facilitated.

#### *Note on Recent Efforts to End Trade Restrictions*

In the years following the end of World War II, the various countries of the Western world have been making increasing efforts to lessen and even remove many of the restrictive devices imposed on the free flow of international trade in the past. Article I of the International Monetary Fund Agreement includes among its goals the expansion and growth of international trade; the promotion of exchange stability and the avoidance of competitive exchange depreciation; the creation of enough confidence among its members to assure the establishment of a multilateral system of payments; and the elimination of foreign exchange controls. Article I of the International Trade Organization Charter includes among its purposes and objectives the furtherance of increased access on equal terms to the world's markets, products, and productive facilities; the reduction of tariffs, import quotas, cartels,<sup>29</sup> and other quantitative restrictions and barriers to world trade; the encouragement of the international flow of capital, assisting the International Monetary Fund in its efforts to eliminate exchange controls, etc.

More recently, the various countries of Western Europe and the

<sup>29</sup> It is clear that insofar as international cartels restrict trade through such practices as allocation of markets, restrictions on production and capacity, and the like, they constitute a (private) source of restriction on the volume of world trade.

United Kingdom have concluded an agreement on a European Payments Union. The purpose of a "payments union" is the establishment of free convertibility of currencies. Such a system would replace the present widespread resort to systems of *bilateral* financing. These systems bind the members of an agreement to utilize balances of currencies of other agreeing countries for purchases only in certain stipulated areas. This, in effect, is the significance of the "sterling area," the member countries of which are bound to spend sterling exchange only in the countries of the sterling area. A payments union would permit the holders of sterling balances to spend them in any of the countries which are members of the payments union. The union, however, aims at the free convertibility of all European currencies. Trade would then be considerably freer of financial restrictions which severely limit imports and, therefore, its total volume.

It is evident from the foregoing that the world in general is moving closer to a system of free (or, at least, freer) trade, reversing the trend established in the interwar period. This reversal of form is taking place for many reasons. Foremost among these is the realization that restrictions on world trade have served to reduce sharply its level, at the same time, by progressively limiting national specialization, impinging increasingly on the living standards of the various peoples of the world. Regardless of the reasons, however, it is evident that as the channels of trade and capital movements are steadily made freer, the mechanism for the international spread of the business cycle will gradually improve in performance. What the consequences of this will be it is hard to foresee. Such a development, however, may well become the source of pressure on the various countries to join in a cooperative program aimed at ensuring domestic and international economic stability at high levels of employment.

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**PART III**

***THE APPLICATION OF BUSINESS CYCLE THEORY***



## CHAPTER 11

### *ECLECTIC THEORY OF THE BUSINESS CYCLE*

#### INTRODUCTION

It is now time to gather up many loose ends and see if we can form something of a cohesive picture of the more general aspects of business cycles. The aim of the present chapter is that of synthesis, of drawing on the various theories and strategic relationships which we have examined and compounding out of them a "model cycle."

We have, it is true, stressed the fact that each cycle is a historical entity unto itself. And so it is. The duration of the cycle and of each phase of the cycle, the intensity, and the amplitude of the cyclical movements in national income and employment, all are likely to display major differences from cycle to cycle. These differences have many sources of origin. They may originate in the factors which provide the initiating forces at the lower or upper turning points of the cycle. Upswings and downswings may behave differently when initiated by shifts in the consumption function, by changes in the rate of autonomous investment, by inventory movements, and so forth. And as implied in the last statement, the turning points themselves may be induced by different factors in various cycles. The characteristics of cycles will differ according to various institutional arrangements, such as the extent and type of development of the banking system, customs with respect to habits of payment and spending, the role of foreign trade, the extent of monopolistic elements, etc. Nor are the multiplier and acceleration effects likely to be the same from cycle to cycle; the same is true of the expectations factor. The elasticities of supply of raw materials and labor, and other factors of production, may also be counted on to differ in successive cycles, and so on.



Despite these dissimilarities in character, each major business cycle in the modern industrial system exhibits certain fundamental likenesses to every other business cycle. The expansion and contraction of the supply of bank credit, the waves of optimism and pessimism, the relatively greater fluctuations in durable goods production, the disparate movements in costs and prices, these and other factors are characteristic of most major cyclical movements. The various similarities will become apparent in the course of the development of the present chapter.

### *Exogenous vs. Endogenous Forces*

At this juncture we should distinguish between two types of forces at work to bring about expansions and contractions in national income, etc. The first type is commonly known as *exogenous* forces. These are disturbances to the economic system which are external to the system itself. Among exogenous forces may be listed wars, innovations, population movements, territorial development, and harvest cycles. Ordinarily, exogenous forces are not subject to explanations involving economic theorizing. Moreover, it is not at all clear that they exhibit the periodic character, or wave-like movements, that we associate with the business cycle. Because of their noneconomic character and their lack of distinct cyclical movements, exogenous factors are generally treated by business cycle analysis as temporary "shocks" to the economic system, shocks which may initiate, modify, or even change the direction of cyclical movements in national income and employment.

In and of themselves, however, exogenous forces are insufficient to explain the rhythmic swings and periodic character of the business cycle. For an explanation of these phenomena we usually refer to factors called *endogenous* forces. Endogenous factors usually embrace those elements which are an integral part of the economic structure. Thus they are forces which operate from *within* the economic system. As such they include economic variables like the volume of bank credit, liquidity preference behavior, the price level, interest rates, the elasticity of supply of the factors of production, the marginal propensity to consume, the accelerator, business and consumer expectations, and so forth. It is factors like

these which are primarily responsible for the periodic, wavelike movements that we call the business cycle.

Perhaps the outstanding common characteristic of all business cycles is the cumulative, self-reinforcing nature of the movements of expansion and contraction. Another observed recurrence is the tendency of expansions and contractions to overreach themselves, until they reverse their direction. These traits are manifest in all business cycles. The knowledge of this fact leads us to look primarily, although not exclusively, to *endogenous* factors for an explanation. The external influences are all too random in occurrence to explain the basic similarities in successive cycles. The major effects of exogenous disturbances are on the timing, the intensity, and the amplitude of cyclical movements; they may initiate expansions and contractions, and they may modify them. But "it seems almost certain at the start that the factors which account for the effects of (external) disturbances taking the particular forms they do, and producing cycles with their fairly rhythmic swings, will be factors concerned with the responses of the business system,"<sup>1</sup> that is, endogenous forces. No matter what the outside shock, the fundamentally similar traits repeat themselves in the course of each cycle.

In pursuing the eclectic discussion of the business cycle, we shall break the cycle up into its customary phases and discuss each of them individually. Starting with the phase of revival, that is, the lower turning point, we shall proceed through the period of upswing to the period of "crisis," or the upper turning point. We shall then conclude the analysis with a discussion of the downswing.

## REVIVAL

### *Environment Factors Conducive to Revival*

In this present section we want to find out what developments occur that make the economic system predisposed to revival. That is to say, we want to ascertain why the downswing does not con-

<sup>1</sup> J. M. Clark, *Strategic Factors in Business Cycles* (New York, National Bureau of Economic Research, 1935), p. 17. The reader is referred to the excellent discussion of Professor Clark on the materials covered in the opening paragraphs of the present chapter; see *ibid.*, pp. 13-22.

tinue forever, why the rate of decline slowly diminishes and the economic system becomes increasingly responsive to stimulating factors as the contraction proceeds.

In the course of the downswing, business firms, banks, and households will have built up their liquidity positions in increasing proportions. This build-up in the liquid asset position will have assumed such forms as the accumulation of idle cash balances, increases in the real value of the cash balances as a result of declining prices, and shifts from long- to short-term securities and from more risky to less risky securities. Outside of mentioning the speculative and precautionary motives, the reasons for this liquidity preference need not detain us here, since we shall discuss them in some detail in connection with the period of downswing.

In the exceptional case the desire for liquidity may be well nigh insatiable. (But even this state of affairs could never be permanent. If it did, it would simply mark the end of the capitalistic system of enterprise.) Under ordinary conditions, the thirst for liquidity can finally be satisfied in some measure, more or less. When this happens the rate of interest may fall somewhat and provide whatever meager stimulus to investment it will. In addition, the greatly expanded state of liquidity may act directly as a spur to lending and to investment and consumption. At the very least, it can be expected to make business firms and consumers more responsive to stimulating influences, for highly liquid positions, particularly in the form of precautionary balances, reduce somewhat the danger of risks of embarrassment from unforeseen contingencies. There will thus be a bit less hesitancy to tie up funds in loans, investment, and consumption.

The element of risk will also apparently be reduced as the number of bankruptcies in the economy diminishes. The number of defaults on outstanding debts will gradually fall off. Some debts previously categorized as "bad" may unexpectedly be paid. Business firms will have retrenched and reorganized. Financial structures will have been altered in composition, reformed in favor of more equity financing and less debt financing. Agreements will have been concluded with all sorts of creditors. With these various forms of financial reorganization, credit will begin to "thaw," firms will be

somewhat more willing to resume their normal credit relations with each other. Banks will make borrowing requirements a little less stringent.

Prices and income may have found their bottom level, or at least slowed down considerably in their rate of decline. Stabilizing elements in the fall in prices are provided by various monopolistic elements in the economy, contractual arrangements, regulated prices, custom, and the general reluctance of businessmen to cut prices for fear of "spoiling the market." Moreover, the more prices have fallen below their norm of the previous prosperity period, the more businessmen and consumers alike may be expected to believe that they have reached their floor. This thought will put an end to much hoarding that is based on the expectation of falling prices. Too, the cessation of the decline in national income and prices may raise the marginal efficiency of capital to some extent. Investment (including replacement) deemed unprofitable while prices and sales (and thus income) were falling may now appear worth while.

It is not unreasonable to expect the national income to diminish in its rate of decline and finally stop falling altogether. We have seen time and again that the chief villain in the case of fluctuations in national income is the rate of investment. It is by far the more volatile of the determinants of national income. Nevertheless, net investment has not exceeded 15 per cent of the national income in the United States since 1879. Hence it does not have too far to go to reach zero, if it does actually fall that far. As long as it does not fall below zero (so that even replacement of existing capital is deficient) or at least does not remain negative for too long a period (in view of past experience, a not unplausible assumption), limits to the fall in national income should be reached fairly quickly. The reason is the stabilizing force provided by consumption. On earlier occasions in this book, we have noted the fact that, in periods of contraction, the short run marginal propensity to consume will tend to decline in value under pressure from the efforts of consumers to maintain their living standards by digging into savings and going into debt. We have also noted, and statistics verify, that the short run *average* propensity to consume (the fraction of *total* income spent on consumption) tends to rise once the national income falls

below certain levels, primarily because of the violent contraction in profits, the major source of savings of the high-saving business firms. Evidence of these stabilizing influences of consumption is revealed by the fact that during most major depressions, the national income usually manages to remain above the low levels of previous depressions. On occasions like the thirties, when the national income has fallen below the level of a previous depression, the reason has been that net investment has fallen below zero to an important degree. Nevertheless, the comparative maintenance of consumption has soon induced enough investment (gross) to raise the level of income again beyond the levels of past depressions, even though it has continued to remain well below current full employment potentials.

If we remember, too, that a contraction is reflected in the fact that there is an excess of savings over investment, then it is easy to see that the decline in national income will reduce the source of current savings, *viz.*, current income. Fluctuations in national income, it should never be forgotten, are basically ascribable to disparities between current savings and current investment. The appropriate movements in national income are the primary equilibrating forces which bring these two variables into equality with each other. Thus when national income falls as a result, say, of a decline in investment, it reduces the rate of current savings (the counterpart of the aforementioned rise in the average propensity to consume). The national income ceases falling, of course, when it succeeds in bringing savings and investment into equality. This is true despite the depressing effects on *induced* investment of a declining national income. For the decline in induced investment is limited by the comparative maintenance of consumption and the usually sharp drop in business savings, plus the fact that investment (gross) cannot fall below replacement demand. Falling national incomes thus tend to reduce current savings much more than they do current consumption and investment. It is basically this very fact, that a declining national income does succeed in reducing current savings more than investment, so that they come into equality, or near equality, with each other, that finally brings the contraction process to a halt, or slows it down sufficiently, thereby paving the way for revival.

Also working as a spur to revival is the reduction in inventories that is the invariable concomitant of and contributing force to the downswing. As a matter of fact, we have observed that although the attempts to reduce inventories may at first be frustrated, there is the strong possibility that in the end they may be reduced too far below their accustomed levels. In this event, the deficiency that has to be made up may be an important force making for revival. What is true of inventories is also true of replacement of durable capital goods. During the downswing, when demand is falling at rapid rates, a good deal of replacement is postponed pending the revival of consumer and investment demand. However, it may happen that the stock of capital is allowed to fall too far in certain areas of industry and becomes insufficient to meet even the low level of current demand, particularly, consumer demand. The workings of the acceleration principle and overoptimistic expectations, leading to too much induced investment in the upswing, play an important role in causing the rate of gross investment in productive capacity to fall below those levels needed to meet current consumption. The result is an increase in the demand for investment goods for replacement purposes. In addition, with the stock of capital being depleted by disinvestment, the current profit rate may rise a bit once the national income has ceased falling.

Added impetus is given to investment by the accumulation of unexploited inventions and improvements which take place during the downswing. Many of these improvements may have been cost-reducing, but in periods of sharply declining income and demand, they still do not appear to warrant the additional outlay. Once the rate of decline in national income falls off considerably, and demand begins to stabilize itself, however, their marginal efficiency may be such as to induce the additional investment.

Finally, there is the fact that as the downswing continues, and unemployment increases, the elasticity of supply of the various productive agents tends to increase (in the upward direction). The meaning of this is that the employment of these productive agents may be increased to a large extent without causing factor prices to rise in any significant manner, if at all. This results primarily from the fact, of course, that most of the newly employed may be taken

from the ranks of the unemployed. This elasticity of supply will apply to labor, to the supply of raw materials, to new pieces of equipment that can be made in industries having large amounts of excess capacity, and also to the very important factor, the supply of loanable funds.

*Factors Actually Pushing the National Income up Again*

One of the factors starting the national income in an upward direction again we have already suggested. This is a rise in replacement demand for inventories and durable capital equipment and plant, after they have been reduced too far even to meet current consumer expenditure. In fact, a decline in the *rate* of disinvestment in some spheres may actually raise the level of (gross) investment enough to give the economy the necessary boost. This was the case in the (anemic) upturn of 1933, when the decline in disinvestment in inventories raised the aggregate level of gross investment, because the decline of gross investment in plant and equipment had leveled off and stabilized itself.

The impetus for an upswing in national income may be provided by investment emanating from autonomous factors, such as the factors of growth, or government investment. A burst of investment may result from a revival in building construction. There may be some great innovation, leading to the growth and development of one or more new industries. This was true, for example, of the railroad, the automobile, and the chemical and electrical industries, whose advent resulted in the expansion of many old and the appearance of many new supplying industries.

War mobilization may, and often has, provided the main outlet for autonomous investment. The opening up of new territory, or the large-scale development of new resources may also prove to be initiating factors. Upward shifts in the consumption function, which, like investment, also have multiplier effects, may also start the national income moving in an upward direction.

The government may step in and engage in various measures designed to stimulate the level of investment. This will often be the case when chronic depression threatens. Government activity might ~~take the form~~ of raising old or imposing new tariffs. In the short

run, we have seen, such action might lead to an increased level of exports (or perhaps reduce the level of imports), all of which will provide some stimulus to export and domestic industries, provided, of course, foreign countries do not retaliate. The government intervention may be confined to easy money policies, pursued with the aid of such central bank expansionary policies as open market purchases, lower reserve requirements, etc. Such policies are designed to stimulate the rate of investment and raise the propensity to consume, through lower interest rates and through increased liquidity on the part of business firms and households. Finally, the government may engage directly in a program of public investment financed with deficit budgets: this line of activity is designed to stimulate consumer and business spending by enlarging incomes all around.

### THE UPSWING

Once the upturn in national income comes about, it has a tendency to be cumulative, to be self-reinforcing in nature. It is, of course, characterized by a continuing excess of investment over savings. The increased expenditures, ordinarily on investment, will usually be financed out of an expansion in the money supply, both in the form of bank credit and dishoarded cash balances. As a result of these inflationary-financed expenditures, there will be increased employment and incomes. Business and consumer incomes will be increased in the first instance, and consumer respondings of the increased incomes, via the multiplier effects of the initial expansion in the money stream, will further increase business incomes. Business spending will be stimulated by enlarged net incomes. The growth in spending will gradually permeate the entire economy as the volume of orders from firm to firm and industry increases, each firm endeavoring to add to its stocks of raw materials and other types of intermediate products. Actually, inventories may at first be depleted somewhat, because production is likely to lag behind the expansion in aggregate spending. Prices may therefore rise, too. With idle capacity rendering marginal costs constant over a wide range of output, however, the rise of prices will probably be slow at first.



As increased sales and perhaps slightly rising prices both serve to increase current business incomes, the marginal efficiency of capital will be given a boost. An added boost to profit expectations will arise from the general lag of costs behind rising prices. In the first place, profits will rise from the ability to distribute fixed overhead costs over larger outputs. Moreover, the elastic supply of labor may permit increased employment without raising wage rates significantly; this is the basis for the well-known tendency of wage rates to lag generally behind rising prices in the early stages of upswings. Raw material costs are also likely to be held down for a while on account of idle capacity and relatively constant or slowly rising marginal costs. The over-all result will be an expansion in induced investment. In view of the large amount of excess capacity that usually exists in the early stages of the upswing, though, most of this induced investment will probably be confined to inventory accumulation and replacement of overused equipment. Of course, much of this replacement will incorporate many of the small improvements accumulated in the course of the previous downswing and depression. The most important thing about the increase in induced investment is the likelihood that the bulk of it will be financed by means of expanded bank credit and dishoarded cash. Employment and incomes (business and consumer) will continue to rise, as will consumer and business outlays.

In the face of growing income and employment on the part of household groups and rising sales and net incomes on the part of business firms, one may expect a spirit of optimism to begin to pervade the thinking of business and household groups alike. Under the influence of this growing optimism, estimates of risk are likely to decline, leading to an increased rate of dishoarding, lending, and spending. Loans will be made more readily by the banks. Firms will grant credit more readily to each other as the feeling of optimism spreads from firm to firm in the manner described earlier in Chapter 9. The marginal efficiency of capital will begin to rise steadily and more rapidly as the upswing gathers momentum. Consumers, too, will spend more freely as the threat of unemployment and reduced incomes disappears and is replaced by the expectancy of more and steadier employment and income.

At first, consumer spending behavior may tend to act as somewhat of a drag on the rate of upswing in national income. We have noted the tendency of the marginal propensity to consume to remain comparatively low in the initial stages of the upswing, mainly because of the tendency to utilize large portions of increments in income for the repayment of debt. In the presence of a very elastic credit supply, such action is a damper on the upswing, since any dearth of current savings to finance investment outlays can easily be made up from bank credit.<sup>2</sup> However, once debts are repaid and confidence is gradually restored, the pressure to regain predepression living standards will raise the value of the marginal propensity to consume, and the multiplier effects of expanding investment will be greater.

As more is spent on consumption out of increased incomes, and as the capacity of existing facilities is approached, prices will begin to rise more rapidly. In the first place, marginal costs will start to rise more and more sharply. Bottlenecks will also begin to make their appearance in the form of labor shortages of various types, difficulties in securing raw materials and perhaps specialized pieces of equipment, etc.

On top of these factors will come an increasing rate of investment, both autonomous and induced. The rising tide of optimism will continue to raise the marginal efficiency of capital. As capacity is approached, the acceleration principle will begin to work with increasing force. The attempts to increase capacity will be further spurred by growing desires to incorporate new inventions and developments both in production techniques and products. We may well employ Schumpeter's concept of the imitative quality of entrepreneurs. As the first ones, with more initiative, hurdle the chief obstacles and demonstrate their success, others in increasing numbers will soon follow suit.

But the notable quality of increasing investment in durable plant and equipment is the extended time period required to bring these processes to completion and permit expanded production of goods

<sup>2</sup> Later on, toward the top of the boom, a high MPC might be a damper to increased investment. For then bank credit becomes increasingly inelastic, and if consumer goods industries are fully occupied, a rise in consumption succeeds only in reducing the supply of investment of funds.

and services. Financed out of newly created bank credit and hoarded cash balances, durable investment projects act to enlarge consumer incomes without providing additional goods and services on which to spend the additional incomes. Thus we have the possibility of an increasing rate of income generation from investment projects following on the heels of a decreasing rate of increase in consumer goods production. Prices may be expected to rise with growing rapidity, at least until many of the investment projects are completed and an increased flow of consumer goods makes its appearance.

### *The Importance of an Elastic Supply of Loanable Funds*

It is to be seen that fundamental to the cumulative character of the upswing is the steady expansion in the flow of money income. It is the fact that the bulk of investment expenditure is financed out of bank credit and/or idle cash balances that enables the expansion process to reinforce itself from within. For these inflationary expenditures constantly enlarge the incomes of consumer and business groups alike and permit and incite them to increase their outlays. In turn, investment is stimulated still more, consumer and business incomes are given a further hike, raising the expenditures of the latter groups again; the process simply repeats itself in the form of an upward spiral of spending. Without the elasticity in the supply of loanable funds, increased spending in one direction would be accomplished primarily by diverting funds from other channels, with little change, if any, in the level of aggregate spending.

If the expansion in credit continues at a rapid enough pace to cause prices to rise too quickly, the upswing may develop a speculative character. There is first the possibility of widespread inventory speculation, businessmen expanding their orders rapidly, and, at the same time, tending to hoard stocks in an effort to cash in on higher selling prices at a later point. If in addition, corporate profits appear to be expanding rapidly, a speculative boom may develop on the stock market, fed by anticipations of higher dividends and financed through the use of bank credit. A rapid rise in share prices may well act as a spur to increased corporate investment through equity borrowing, since the rise in stock prices in the face

of constant or lagging dividends means lower borrowing costs, the ratio of dividends to stock prices being a yield that corresponds to the interest rate on bonds. Moreover, speculative gains acquired in the course of a stock market boom will provide a further stimulus to consumer spending, especially on consumer durables.

### *Some Qualifying Remarks*

The foregoing should not be construed to imply that all upswings take place without interruption. Unless sufficient investment is forthcoming from autonomous sources, the upswing is likely to be anemic in character and/or short-lived in duration. An upswing which relies on increased investment in inventories and replacement in plant and equipment may well fall far short of full employment. It is possible that a spurt in inventory and/or replacement investment in durable producer goods may provide the initial impetus for the lower turning point, but the onus for a prolonged and vigorous upswing rests primarily on the rate of autonomous investment.

We have examined models which show that, through the interaction of the multiplier and acceleration principles, fluctuations in the national income can take place in more or less a self-contained manner. But we should not construe these models to prove more than they are intended to prove. They demonstrate, rather conclusively, that fluctuations in national income may take place without the intervention of special (exogenous) forces, such as bottlenecks in labor and credit at the upper turning point and low interest rates or great new inventions at the lower turning point. But they do not specify the extent of the movements in income in either direction in relation to the full employment income. Thus an upswing may come about as a result of the workings of the multiplier and acceleration principles, but there is no assurance whatever that it will reach the full employment level of income. Nor do we have any way of knowing exactly how far from the full employment income the interaction of these two principles will drag the national income downward.

An important exception to these remarks is provided by the rate of *autonomous* investment that is usually assumed in such models. The discussion of the interaction of the multiplier and acceleration

effects in Chapter 3 revealed that for most probable values of the relation, national income would merely fluctuate about the level indicated by the multiplier value of the autonomous investment. Hence it is possible to conceive of a rate of autonomous investment whose multiplier value would yield the full employment level of income, and which, if maintained, would assure that the national income would fluctuate about the full employment level. But this begs a good deal of the question. For there is no assurance that the necessary rate of autonomous investment will be forthcoming. One of the major problems of cyclical instability is not only fluctuations in induced investment, but fluctuations in autonomous investment. Models like the one discussed in Chapter 3 are misleading to the extent that they take the rate of autonomous investment as a given datum when it itself is one of the basic factors in the cyclical fluctuations of national income. In the presence of rather pronounced cyclical stability in the *position* of the consumption function, and in the absence of a high consumption function, close enough to the full employment income to minimize the importance of fluctuations in autonomous investment, the latter are fundamental to an explanation of the scope of the fluctuations in national income around the full employment level.<sup>1</sup>

If an upswing is marked by undue caution on the part of business firms and households alike, the product of pessimism carried over from the depression, the rate of autonomous and induced investment required for full employment might not be forthcoming. Or such results might develop because of a temporary saturation in the building industry, residential and commercial. Most major cyclical upswings in the past which have coincided with severe slumps in the building industry have been retarded to an important degree by the dearth of construction investment. This was patently true, for example, of the Great Depression of the thirties in the United States. Autonomous investment may also be lacking in suf-

<sup>1</sup> Of course, with a consumption function high enough to assure a reasonably steady full employment income, there would always be the danger of fluctuations in autonomous investment precipitating an inflationary spiral. With a stable consumption function (in position, that is, not shape), however, we would have some indication of the average level about which income would fluctuate.

ficient volume because of the absence of any great technological innovations, vast enough in scope to have ramifications like those of the railroad in the eighties of the previous century and the electric utilities, chemical, and automobile industries in the first quarter or so of the present century. In other words, a temporary period of stagnation may set in similar to the decades of the nineties and the thirties in the United States. In such cases, cyclical fluctuations are not done away with; rather they continue, but the average about which they fluctuate tends to be below the full employment level of income, and a hard core of unemployment develops pending a revival in autonomous investment.

It is possible, of course, for autonomous investment of sufficient magnitude to be provided from government sources. But if pessimism continues to reign in the private sectors of the economy, cessation of government expenditures may see a collapse right back to depression levels again. Something of this sort occurred in the thirties. Although the total government deficits never reached the magnitudes required for full employment, the virtual balancing of the Federal cash budget in the fall of 1937 was followed by a sharp recession.

Moreover, even if investment promised to be forthcoming in sufficient magnitude to make possible the *eventual* attainment of a full employment prosperity, the existence of too much depression-born pessimism might expose the economy to a rude set-back by adverse factors. Thus a sudden large decline in exports relative to imports (because, say, of the raising of foreign tariffs or a depression abroad) may so upset calculations and expectations in large segments of the economy that investment in these areas declines, and the economy is set back on its heels. A labor strike or a large scale shut-down in a particular area of industry may excite sufficient fear and pessimism as to bring about the same results. In circumstances when the rate of investment is high and the boom is vigorous and buoyant, having spread throughout the economy, such factors would merely slow down the rate of upswing at most.

Finally, we should not forget the *minor* recessions evoked by such factors as inventory cycles. As long as the rate of autonomous investment is strong, these minor cycles, we have seen, are merely

interruptions (albeit of a year or two in duration) in major upswings. Under such circumstances autonomous investment provides a rather high floor below which the inventory recessions cannot drag the level of national income and employment. When the rate of autonomous investment is weak, however, inventory recessions, along with such factors as those mentioned above, may pull the bottom out from under major upswings.

### *Expansion from Full Employment*

In recent years, we have undergone the experience of an economy's expanding from full employment of the nation's resources. The transition from a wartime to a peacetime economy in the period following the close of World War II (and World War I) provides us with a partial illustration of the nature of an expansion from full employment. In the first place, it is clear that any growth in the *aggregate* level of output is contingent upon the normal growth in productivity. This will come in due time, as the population and labor force grow, more capital is accumulated, and advances take place in the techniques of production. In the United States the advance in productivity resulting from these three sources has approximated 3 per cent a year for the last century or so.

Expansion of the money supply at a rate faster than the growth in national product must, of course, give rise to inflation. The extent to which this is possible is indicated by the recent postwar period. It is true that this period possessed the unique combination of four years or so of deferred consumer demand plus an unprecedented accumulation of liquid assets. For our purposes, however, the source of the expansion of the money income is not important. Whether it comes from expanded bank credit or dishoarded cash and/or the liquidation of noncash assets (actually, the latter turned out to result in a multiple expansion of credit because of the bond price-support policies of the Federal Reserve System), the inflationary effects are much the same. The only reason the inflation was not greater than it was was the fact of transformation from a war to a peace economy. This transformation enabled the *peacetime* national product to grow at a tremendous rate, and thus offset to a considerable extent the expansion

in the money supply. Of course, this factor serves to limit the accuracy of the postwar period as an illustration of expansion from full employment. Expansion from a fully employed peacetime economy would be more difficult (although such an accumulation of liquidity as characterized the postwar period would be unlikely).

Moreover, we have emphasized at earlier points in this book that an increase in production in one channel of industry in times of full employment can take place only at the expense of production elsewhere. This happens through the process of competing factors away from current employments simply by bidding up factor prices. The analysis of expansion carried out by the Austrian overinvestment theories sheds light on the course of events in such periods. If there is to be an expansion of investment, it must take place at the expense of consumption. Out of such a situation a variety of possibilities may develop. One of these is that discussed by the Austrians, namely, a capital shortage resulting from the efforts of consumers to recoup living standards which they involuntarily reduced in the face of expanding bank credit and rising prices. But this is only one possibility. For it assumes a curtailment of bank lending as banks reach the limits of their reserves. Since 1914 (the end of the "golden" era of the gold standard), however, it is debatable whether this assumption has been fully realized in reality. Another possibility is a period of slow or rapid inflation, depending on the rate of growth in the money supply relative to the rate of growth in national income. A third possibility is the completion of the investment processes and an expansion of the supply of consumer goods. These and other possibilities will be discussed at greater length at the end of the present chapter.<sup>4</sup>

It should be clear that the process of expansion from full employment is bound to be much less smooth than one from large-scale unemployment. The reason is that in the former case the problem of bottlenecks makes its presence felt immediately, whereas in the latter case, it is apt to be postponed for a while. Difficulties in obtaining special types of labor and various types of raw materials

<sup>4</sup> If the reader finds himself wondering about the relationship of these possibilities to the developments in the postwar period, the answer should be quite clear. An expansion in both investment and consumption was made possible by the release of factors from the war industries.



are the bane of all production managers during periods of full or near-full employment. The word "shortages" is the keynote. Certainly, the reader will have little difficulty in recalling the cry of persistent shortages in the postwar period.

## THE CRISIS

### *Increasing Vulnerability of the Economy to Adverse Developments*

As the upswing progresses, bringing into employment more and more of the idle resources, certain tendencies begin to appear which gradually make the economy increasingly susceptible to breakdown under pressure from adverse developments. For one thing, the rate of increase in prices may begin to slow down as many productive processes are completed, and an increasing flow of consumer goods makes its appearance on the market. Moreover, many investment projects will be completed, adding to the stock of capital. The combination of this factor with that of a decline in the rate of price increase (if not absolute price declines in some areas) will serve gradually to reduce the marginal efficiency of capital and act as a damper to further investment.

If the upswing has been characterized by sharply rising prices, there may develop an increasing skepticism that the rise in the price level will continue. Insofar as rising prices are, to the individual producer and seller, the result of pressure from a growing monetary demand, expectations that prices will not continue to rise, and may even decline, are apt to be accompanied by anticipations of a declining rate of growth of demand, if not a change in the direction of monetary demand altogether. These expectations are likely to be fed by a gradual (involuntary) accumulation of inventories, the product of forces discussed below. Anticipations of this sort will, of course, damp induced investment (*i.e.*, the value of the acceleration coefficient, or relation, will be reduced).

Further damping effects may be provided by the decline in the marginal propensity to consume that may set in soon after the level of (real) income has reached the high of any previous prosperity. For then living standards of these previous periods will have been reached, and the slower rate of adjustment to previously inexperi-

enced real income levels will cause the fraction spent on consumption out of further increments in income (*i.e.*, MPC) to decline. Additional pressure is placed on consumption by the growth of profits relative to other incomes, a development characteristic of all cyclical upswings. Business firms ordinarily have higher (marginal) propensities to save than individual persons. The gradual decline in the rate of consumer spending will witness an unexpected (involuntary) growth of inventories as production proceeds to outrun consumption. If this situation bids fair to continue for an extended period of time, the damping effects not only on current production (for sales and inventories), but also on induced investment in durable goods should be quite apparent.

Adding to the difficulties that arise after the upswing has continued for an extended period is the increasingly inelastic credit supply which gradually develops. Unless the accumulation of idle balances during the depression has been exceptional, we may expect the sources of investment funds provided by idle cash balances of nonbank groups to dry up fairly readily in the course of the upswing. Then, too, the excess reserves of banks will be drawn down gradually, both by the expansion of credit and by the external drain of cash into circulation that invariably accompanies a rise in the national income. As a result, banks will become increasingly "uppety" about renewing loans and, especially, about the granting of new loans. Not only will interest rates rise, but collateral requirements and other demands by banks will become more stringent. Capital rationing will take place with growing force, with the banks giving preference more and more to old, established customers and, perhaps, limiting the line of credit of any one customer. It is clear that as the difficulties of obtaining access to additional funds grow, the rate of growth in national income and sales will start to fall off.

As Professor Haberler has noted,<sup>5</sup> perhaps the most insidious effect of the increasing inelasticity of credit derives from the fact that it renders the economy especially vulnerable to deflationary shocks, for it reduces the chances of a decrease in the money supply

<sup>5</sup> *Prosperity and Depression* (Lake Success and New York, United Nations, 1946), p. 357.

or a decline in income velocity (through hoarding, that is) in one area being offset by an expansion in the supply of money in other areas.

Costs will also begin to rise in a progressive fashion. Long before full employment is reached, bottlenecks will begin to appear in various areas of the economy in the form of labor shortages and raw-material shortages. Shortages of specialized types of labor will appear in different sectors of industry. Certain (higher) stages of industry will expand more slowly than other (lower) stages, so that the latter are kept from expanding by the former, as a result of raw material and equipment shortages. The reader is undoubtedly familiar with the steel shortages which hampered the expansion of automobile production in the recent postwar period, for example.

More and more will expansion in one sector entail competing factors away from other employments, pushing factor prices up. (In a growing number of cases expansion will be stymied altogether by factor immobility.) In addition, costs will be raised by the increasing employment of marginal workers, resort to marginal plant and equipment, and wastes which are allowed to creep in under the influence of high profits. Wage rates will start to rise at faster rates, particularly in an era of strong trade unions, whose strength, incidentally, always increases in periods of prosperity and rising prices.

In all these ways, costs will start to rise at an increasing rate. And this may happen as the rate of increase in prices begins to decline, under the pressure of such factors as a declining marginal propensity to consume and accumulating stocks, increased output as investment processes are completed, and perhaps a decreasing rate of expansion in bank credit as the limits of required reserves are reached. The effects on the marginal efficiency of capital of gradually contracting profit margins needs no elaboration.

In the preceding paragraphs of this section, we have noted factors which act as dampers on the current rate of investment and factors which tend to raise the rate of savings out of current income. The excess of investment over savings, the mark of all expansions in national income, is thus gradually reduced. We turn now to a dis-

cussion of factors which close this gap altogether and ultimately convert it into one wherein savings exceed investment.

### *Factors Actually Bringing About the Downturn*

Perhaps foremost in the line of factors which may effect a downturn in the level of business activity is a temporary saturation in an important channel of industry, such as the building industry. Or there is the possibility of an important new industry's maturing, that is, reaching the acme of its expansion. In either case there would be a sudden letdown in the rate of investment. If uncompensated by large amounts of new investment elsewhere, this fall in investment will lead to a break in the national income stream. Alternatively, or even additionally, there is the possibility of exhaustion of a number of investment outlets at once. New techniques of production, new products and inventions, the development of new resources, etc., accumulated and carried over from the depression may be exploited to the full, similarly accumulated needs for replacement due to depreciation and obsolescence will also be thoroughly worked through at an accelerated pace in the course of the upswing. Unless new vistas of investment suddenly open up, the aggregate level of investment will decline and, together with the multiplier effects, carry the national income down with it in much greater magnitude.

An expansion may also be brought to an abrupt halt by a large decline in government spending relative to taxes. This might mean merely a reduction in budgetary deficits or the building up of a surplus budget. In either event, a sharp deflationary force on the income stream may result from such action, of sufficient magnitude to set in motion the forces of contraction.<sup>6</sup>

Another factor, already mentioned several times, is the development of an inventory recession. Whether this factor will convert an upswing into a downswing depends largely on the strength and resiliency of investment from other sources, particularly autonomous factors. If the investment outlets provided by the autonomous factors are great enough, inventory recessions will merely slow

<sup>6</sup> The effects of deficit and surplus financing by national governments is discussed at length in Chapter 15, pp. 548-573 and *passim*.

down the rate of upswing. A slight dip in national income and employment will appear, but a very high floor will be maintained by autonomous investment. And as soon as the overaccumulated inventories have been reduced, the upswing will be resumed. However, if investment provided by the dynamic growth factors has begun to slacken considerably, an inventory recession may turn out to be the proverbial backbreaking straw.

The same type of analysis we have used in connection with inventory recessions may be applied to many other maladjustments which may develop in particular sectors of the economy. For example, a sudden decline in foreign investment or loss of export markets, due to foreign tariffs or a recession abroad, may initiate a major downswing, unless investment from other areas is strong enough to sustain the income stream during the period of adjustment and shift of factors from export industries to those producing for domestic purposes. A similar type of maladjustment may arise in the form of a sudden shift in consumer demand from one product to another; there may be a drop in production in one area of industry as a result of unfulfilled expectations about demand. The attainment of full employment may slow down the rate of expansion of certain industries, leaving other (higher) ones in an overexpanded state. In all such cases it is necessary for the expansion elsewhere to be buoyant enough to withstand the strain imposed on the income stream during the period of shift of factors.

Even when investment opportunities exist in sufficient volume to maintain the income stream, there is no guarantee that they will be activated promptly enough to prevent a decided break in the income stream from developing. After all, investment projects, particularly of the "heavy" variety, require a good deal of advance planning and preparation. Before they can get started, a break in the income stream may spread in such proportions that it is too late for them to forestall a major collapse. There is even the possibility that a spreading decline in demand may lead to the postponement of contemplated investment projects.

A serious assumption implicit in the discussion of the preceding paragraphs is that of large-scale factor mobility. In real life, of course, the assumed degree of mobility stands a good chance of

not being realized. As a matter of fact, it would probably be an accidental set of circumstances that provided the necessary degree of mobility, circumstances like close geographical proximity or easy adaptability of labor and equipment. In most cases the required degree of mobility will be lacking, and a collapse of investment in one area (in contrast with a general collapse of demand) may cause a break in the income stream of sufficient magnitude to initiate a downward spiral, simply because the agents of production cannot be shifted about at all or quickly enough.

The ability of an expansion of investment in one sector of industry to offset a decline elsewhere will be rendered especially difficult by the growing inelasticity of bank credit. As the latter grows in importance, we have previously observed, it becomes increasingly difficult to obtain the necessary expansion in the income stream in one sector of the economy to offset the decline in spending in another area.

One writer, Mr. Hawtrey, whose writings we have examined, has gone so far as to predicate the downturn exclusively on the cessation of the expansion of bank credit. This factor alone, however, is insufficient to explain a major downturn. It implies that if care were taken (say, by the central bank) to keep the banks amply supplied with reserves, so that they could continue to expand credit indefinitely, the crisis would be avoided. Once full or near-full employment is reached, however, the continued creation of bank credit (at least at a rate greater than the rate of growth of national income) would result in inflationary movements, which themselves would lead to eventual breakdown.

The more interesting question to be raised is why the economy cannot attain stability at full employment once the expansion of credit ceases (or is made to correspond approximately to the annual growth in productivity). The principle of acceleration, interpreted broadly, provides the answer. The capital goods industries, or important segments of them, are quite likely to have geared themselves, in the course of a major upswing, to an expanding rate of investment demand, both from consumer goods industries and other (lower) stages of capital goods industries. But a net increase in investment (autonomous and induced) is itself largely con-

tingent upon the ability to obtain, readily, new funds from the banking system. Once credit expansion slows down, aggregate demands, consumer and investment, finds it hard to continue to increase. The outcome will be that the consumer goods industries will slow up expansion of production and curtail their orders for additional capital goods. Investment orders will also be curtailed from autonomous sources in the lower stages of capital goods production (say, railroad or some other type of construction), as the latter are confronted with increasing difficulties in obtaining new loans. In these circumstances, the higher stages of production will find themselves in an overexpanded state at this point, and a sharp contraction in investment outlays can be expected to follow. Even without credit shortages, however, other bottlenecks, like labor shortages, or a declining marginal propensity to consume may keep the lower stages of production (capital and consumer) from expanding at the necessary rate, and the higher stages, again, may find themselves in an overexpanded state.

### THE DOWNSWING

Once the break comes, the downswing, like the upswing, tends to be cumulative and self-reinforcing in nature. In fact, the processes of contraction are, for the most part, merely those forces discussed in connection with the upswing operating in reverse. The surface manifestations of these forces is an excess of current savings over current investment.

Let us begin by assuming the break has come, regardless of its cause. The basic reason for the tendency of the downswing to develop cumulative characteristics lies in the contraction of the money stream. Somewhere in the economy, an important segment of business, or, possibly, consumer spending falls off. Since we are discussing a downturn in the business cycle, it follows that this drop in consumption or investment spending constitutes a *net* decline in the income stream; that is, there is no offsetting investment or consumption activity elsewhere. If this is so, then the decline in aggregate spending must be accompanied by a repayment of bank ~~debt~~ and/or hoarding in equal amounts. Employment and income ~~fall off~~ in the sectors where this happens. However, as the income

of the factors of production employed in these sectors declines, so does their monetary demand.

With this decline in monetary demand, sales fall off in other areas of the economy. Inventories will begin to accumulate (involuntarily) in the first instance. In the face of rising inventories, orders to producers of various types of intermediate goods will be curtailed. Current output will fall off, as a result of both curtailed orders for stocks and for (declining) current sales. Production and employment fall off some more. An air of uncertainty will soon be felt, and precautionary cash balances will, accordingly, be strengthened somewhat, adding to the deflationary forces. The decline in output will also diminish the need for working capital to a certain extent, so that, in part, current receipts will be utilized to reduce outstanding debt. To the extent that this involves bank debt, the money stream is further reduced. Monetary demand thus continues to decline, as do, therefore, current sales.

If the previous boom has been marked by strong speculation in securities, the first major area of collapse will often appear in the security markets, particularly those involving equity securities (stocks). In such cases, the commercial banks, who ordinarily finance the bulk of such speculation, suffer widespread losses, both as a result of defaults on (call) loans and the collapse of collateral security values. The ramifications of these events are often widespread. For one thing, many banks, who have suffered because of the stock market collapse, particularly those in the call loan areas, may develop restrictive credit operations on ordinary business loans, raising interest rates and collateral requirements, etc., on the latter. Furthermore, the collapse of security values tends to raise the real rates of interest on equity types of borrowing for business enterprise. The rate of consumer spending will also be affected by the cutbacks of those consumer units who have suffered heavily in the stock market breakdown.

There is likely to be a rise in the number of business failures. In the event that these result in widespread default on debt, credit conditions are sure to tighten still more. The damping effects of such developments will be especially serious if, again, the banking system is involved. For a further tightening of credit conditions by



head charges will increase as output declines, and the resistance of all wage groups to reductions in wage rates is well known." The resulting contractions in profit margins and/or the turning of profit margins into losses in many cases, add up to increasingly reduced estimates of earnings on future investments. The decrease in induced investment will, in all likelihood, be accompanied by further contractions in bank credit and increases in hoarded balances. The deflationary pressures on aggregate income and demand are thus given further impetus.

The role of expectations must, as usual, be recognized. As income and employment continue to decline, household groups will become increasingly fearful about future income and employment. Business groups will also become more fretful as they are confronted with declining sales and profits and even losses. A spirit of pessimism will gradually begin to pervade the thinking of all groups. Under the influence of this growing pessimism, estimates of risk will rise, leading to an increased rate of hoarding, involving bank and nonbank groups alike. Firms will become steadily more reluctant to grant credit to each other. Banks will continue to tighten credit conditions. Consumers also will spend less freely as the threat of reduced employment and incomes increases.

In the initial stages of the contraction, the decline in consumer spending is likely to be slow. The reason is that household groups will ordinarily resist any sharp impingements on their living standards, preferring to dig into past savings and to go into debt. On this account, the marginal propensity to consume will be small in value at first, and therefore, the multiplier effects of the reductions in investment will be held within fairly narrow limits. As savings are exhausted, however, and the limits to borrowing capacities are reached, the decline in consumption corresponding to reduced incomes may get larger. And with this rise in the marginal propensity

<sup>9</sup> The arguments for and against *general* wage reductions we have discussed at great length, and we have raised serious doubts concerning their reliability as stimuli to investment in periods of contraction. However, isolated wage reductions in special areas might in some cases permit costs to be reduced without affecting demand and *possibly* stimulate output in these areas. It has often been suggested that a wage reduction in capital goods industries alone might stimulate investment by reducing the supply price of investment goods.

to consume, the multiplier effects of declines in investment will tend to get correspondingly larger.

As the downswing progresses, we may expect business firms, banks and households to endeavor to build up their liquidity positions in ever increasing proportions. This will be accomplished in a variety of ways. On the basis of precautionary and/or speculative motives, banks will call loans, refuse to renew expiring old ones or to grant new ones, and reduce their long term investments, with the result that excess (noninterest earning) reserves will gradually accumulate. The desire for liquidity on the part of the banks will be stimulated by the public's demand for cash, by defaults and bankruptcies, and possibly by flights of capital out of the country concerned. On the basis of the same motives, business firms will build up their idle cash balances. The fear of default on outstanding credits, the fear of demands for early repayments of debts, and the increasing inability to borrow from the banks and other possible sources of lending in times of emergency, all induce a great amount of precautionary hoarding.

A collapse in asset values may develop under pressure of forced liquidations by bank and nonbank groups, distress selling by business groups, and the unloading of securities merely in anticipation of a general decline in security prices. The threat of a collapse in capital values, that is, rise in interest rates, will induce widespread speculative hoarding. A very low marginal efficiency of capital, the result of a low volume of current sales and extreme pessimism about the future, will act as a strong deterrent to investment in new capital goods and the replacement of old ones, on the one hand, and as a strong incentive to the building up of precautionary and speculative balances, on the other. Actually, it is probably more accurate to say that the general rush for liquidity is fulfilled not only by moving from securities and investments into cash, but also by moving from more to less risky and from long term to shorter term securities. The general efforts to find less risky securities, etc. in which to place money helps to explain the widespread increase in the demand for (national) government securities and the all-around rise in the credit standing of national governments, relative to that of private borrowers, during depressions.

We have noted, at the beginning of this chapter, various reasons why the rate of contraction in national income and employment must eventually lose momentum and begin to slow down. The demand for liquidity is ordinarily not insatiable, so that the growth of hoards will, in most cases, slowly approach zero. The necessity to replace inventories and durable capital equipment to meet current demand will also eventually make itself felt, etc. Such factors as these will gradually make their appearance and slowly reduce the excess of savings over investment. Primary among forces acting to reduce the current rate of saving are the decline in current income, the efforts of consumers to maintain living standards, and the sharp fall in business profits, a major source of savings in prosperities. If enough autonomous investment finally comes forth, the national income will eventually be pushed up to full employment levels again; otherwise the economy will wallow in the throes of stagnation, with the cyclical movements being largely determined by the multiplier and acceleration values of the amount of autonomous investment that does exist. In the latter case, however, upswings will continue to fall short of full employment levels of income, until the required amounts of investment, derived from the factors of growth, make their appearance.

### *Some Qualifying Remarks*

Needless to say, the downswing does not proceed at a uniform rate throughout the entire period of contraction. Rather it tends to start slowly and gradually gain momentum as it continues. In the early stages the demand for comparatively few items may fall off. But if and when this results in *net* contractions in the money stream, demand falls off elsewhere, inducing further shrinkages in monetary demand, and gradually, with increasing force, the contraction tends to spread throughout the economic system.

It is in the initial stages of the downswing that the movement stands the greatest chances of reversing itself on the appearance of favorable developments. A sudden increase in exports relative to imports may do the trick. A mild expansion in government (deficit-financed) spending may also bring the contraction to a halt and reverse the process. A burst of investment in some particular area

of industry may accomplish the same results. However, once the forces of contraction have made themselves felt with some intensity throughout broad areas of the economy, and a feeling of deep pessimism has enveloped the thinking of businessmen in general, the chances of isolated expansionary developments reversing the movements are slim, indeed. At most, these factors may succeed in slowing down the rate of contraction in income and employment.

We might also note the possibility of a major downswing's being interrupted and reversed temporarily by such factors as inventory cycles. Although such influences have not been widely observed in the past, we do have evidence that the major downswing of 1893-1897 was reversed temporarily during a period of inventory accumulation. Once the latter had been accomplished, the downswing was resumed. Such developments, when they take place after the decline in aggregate demand has made itself felt throughout the economy, may not be expected to raise the national income very far back in the direction of the full employment level. This will happen only when there is sufficient autonomous investment in store and awaiting, perhaps, the advent of a more favorable economic environment.

#### UNDERCONSUMPTION VS. OVERINVESTMENT

A basic question that arises at this point is whether the downturn is precipitated by too much consumption, that is, overinvestment (capital shortage) or too much saving, that is, underconsumption. While, on the whole, most theories of the cycle can be characterized as either underconsumption or overinvestment, in actual fact the matter is very complex and not always amenable to such simple categorization.

The minimum conditions for an overinvestment (*undersaving*) crisis are a totally inelastic money and credit supply, full employment in the consumer goods industries, and considerably less than full employment in the capital goods industries.<sup>10</sup> Only when *all* three of these conditions are satisfied does it make sense to say that an increase in the rate of consumption will precipitate a collapse.

<sup>10</sup> See J. Tinbergen and J. J. Polak, *The Dynamics of Business Cycles* (Chicago, University of Chicago Press, 1950), pp. 225-227.

An increase in the rate of consumption with an *elastic* credit structure will simply cause the total money stream to expand, as businessmen, deprived of savings, turn to the banking system for investment funds. In fact, it may not be too much of an exaggeration to say that, *ceteris paribus*, so long as the credit supply is elastic, the other conditions are of relatively minor importance.

If the credit structure is inelastic, and the rate of consumer spending increases in the face of full employment in the consumer goods industries and less than full employment in the investment goods industries, an overinvestment crisis of the type envisaged by the Austrians, is bound to develop. For the consumer goods industries could not expand production, while the producer goods industries would have to cut back. The immobility of productive agents would undoubtedly prevent a quick shift of employment from the latter to the former. In these circumstances, an increase in savings might avert a crisis.

However, even this is not certain. If bottlenecks, other than credit shortages, keep the fully occupied consumer goods industries from expanding production, so that they do not (at least) maintain their investment orders to the higher stages of production, neither increased consumption nor increased savings will help. Of course, the latter statement itself assumes an insufficient demand for investment goods from autonomous investment. While this type of investment may be forthcoming, it may also entail important shifts in the production process, and various types of immobilities may prevent quick and easy changes. If the economy at this time has become increasingly vulnerable to downward shocks, the resulting break in the income stream (even though temporary) may precipitate a collapse. Nothing need be said about the consequences of an insufficient volume of autonomous investment.

In what sense and under what conditions may we have an underconsumption crisis? First, let us put aside for the moment all problems of bottlenecks. Now suppose that a large amount of investment projects have been completed, of the type that will result in a greatly increased rate of production of consumer goods. Unless the ratio of consumption to total national income, that is, the

average propensity to consume rises to match the increased rate of flow of consumer goods, producers of these goods (including wholesalers and retailers) are going to find their inventories involuntarily piling up on them. The result is likely to be a curtailment of induced investment. Unless there are offsetting increases in investment orders originating in the dynamic factors of growth, a collapse is inevitable. It is the opinion of many writers, including the present one, that if anything, the ratio of consumer spending to national income tends to decline, at least once the national income passes all previous peaks.<sup>11</sup>

A different set of circumstances may also be viewed as an underconsumption crisis. Assume a temporary saturation, or stagnation, in autonomous investment outlets. Thus all advances in productive techniques and other large-scale innovations (in the Schumpetrian sense) may have been exploited to the full. Investment in construction of all sorts may also have been worked through thoroughly, and so on. At this point, if a collapse is to be averted, there must be an upward shift in the consumption function and, possibly, induced investment to an extent that will compensate for the decline in autonomous investment. If the required rise in the consumption function is not forthcoming, the ensuing downturn might perhaps be described as an underconsumption crisis. In the present writer's opinion, if any short paragraph will describe the basic origins of the collapse of 1929 in the United States, this present paragraph will.

If we introduce the problem of bottlenecks, the danger of underconsumption crises of the sort just described is even more acute. In both cases quick and easy shifts in the production processes may be forestalled by the immobility of the factors of production.

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<sup>11</sup> See Chapter 3, pp. 99-101 and Chapter 8, pp. 276-278 and *passim*.

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## CHAPTER 12

### ***BUSINESS CYCLES IN THE UNITED STATES, 1919-1949: THE TWENTIES***

#### **INTRODUCTION**

In the present chapter we want to examine the cyclical experience of the U.S. economy since the end of World War I, with a view, as much as possible, to observing to what extent the cyclical developments of this period correspond to the synthesis of business cycle theory evolved in the preceding chapter. In accordance with the position we have consistently taken throughout the present work, we shall treat the period of 1919-1949 as consisting of two major cycles and five minor cycles. The major cycles comprise (1) the period from the trough of 1921 to the trough of 1933; (2) the period from the trough of 1933 to the trough of 1938. The period extending from the trough of 1938 to the present is too dominated by military activity to be amenable to cyclical analysis. The minor cycles include (1) the period of 1919-1921; (2) the period 1921-1924; (3) the period 1924-1927; (4) 1936-1938; and (5) the period encompassing, approximately, the year 1949. All of the minor cycles were primarily inventory cycles, in that the bulk of the movements in investment and national income originated in inventory fluctuations.

One difficulty that arises in the above time delineation of *major* cyclical movements appears in connection with the fluctuations of the thirties. The thirties was decidedly a period of stagnation. Unemployment fell below an approximate eight million workers



(including those on work relief) only once after 1930, and this just for one year (1937). An average of about 18 per cent of the available labor supply was unemployed during the period from 1931 to the first half of 1940, and this figure does *not* include the three to four millions on work relief in this period. These figures, of course, only hint at the vast amount of idle plant and equipment that accompanied the idle men.

Nevertheless, there was a decided upswing in national income and employment in the period from 1933–1937. In the fall of 1937 a collapse set in, carrying income and employment down again. As we have indicated, however, the upswing fell considerably short of reaching full employment. The entire decade was in the grips of a temporary stagnation, gross national product failing to approach the 1929 level until 1940 (despite the growth in productivity and the labor force that occurred during the decade), and then primarily as a result of a stimulus that sprang from war-induced expenditures.

For this reason some people may question the advisability of calling the period of 1933–1937 an interval of cyclical expansion at all. The answer to such a question is that periods of stagnation do not preclude cyclical fluctuations in national income; they merely signify that the upswings in national income that do occur represent only partial recoveries, in the sense that they consistently fail to attain the heights necessary to provide full employment for the economy's available resources.

Further difficulties arise in the attempt to define the cyclical movements of the decade of the forties and beyond. Since 1940, of course, the entire economic scene has been dominated by war preparation, war devastation, and more war preparation. No attempt to explain the cyclical experience of the past decade can be made outside a framework dominated by war expenditures and finance and postwar military and economic aid to foreign countries. With the exception of the year 1949, the economy has operated, since 1942, virtually at full employment income levels, and under the stimulus provided by government military spending, promises to do so for an indefinite period in the future. Political and military developments abroad have deprived us of the opportunity to see

how long the upswing that began in 1945, with the conclusion of hostilities, would continue without a major downswing. For a long time into the future, the primary economic problem, from the standpoint of cyclical analysis, is likely to be one of inflation.

#### THE CYCLE OF 1919-1921

There are some grounds for treating the upswing that began in April of 1919 as a continuation of the upswing that began in 1915 under the impetus of World War I and was interrupted momentarily by the termination of this conflict. However, much of the usefulness of pursuing such a treatment may be doubted in view of the overwhelming importance played by military expenditures and foreign (military) exports during the period of U.S. "neutrality" and later participation in the conflict. Moreover, the upswing that began in the spring of 1919 affords us a good opportunity to examine in detail the workings of an economy that starts an expansion from relatively full employment.

A little background, however, should help place the events of the cycle under discussion in perspective. The opening of World War I found the United States in the midst of a depression. The outbreak of the war caused a sharp withdrawal of short-term capital from the U.S. money markets to Europe, precipitating a great stringency of credit in the United States. The period of liquidity crisis soon gave way to a period of strong expansion, initiated, in the main, by a strong inflow of gold and a sharp rise in the demand for American exports to the countries at war. As might be expected, the period, 1915-1918 was marked by a tremendous expansion in the money supply from 11.5 billion dollars in 1915 to 19.7 billion dollars in 1918. There was, of course, a further accumulation of liquidity in the form of government securities sold to the public and the banks in the course of the war.

Accompanying the great increase in liquidity was the usual large volume of deferred consumer demand. Prices had also risen sharply, about 35 per cent since 1914. At the same time, wages had lagged behind to a significant extent—a factor that was to play an important role in the ensuing cycle. Production flourished at great rates during this period, but, as is usual during war periods, there

was a minimum of replacement and new construction, particularly, but certainly not exclusively, in industries that produced civilian goods. These factors, too, exerted a strong influence on the course of developments in the twenties.

The end of the war found the atmosphere dominated by pessimism and widespread uncertainty. Much of the apprehension was rooted in the feeling that the end of the war would give rise to a period of readjustment and temporary slump, as the economy converted itself from a wartime to a peacetime economy. It was felt that the sudden decline in government military spending was certain to create a temporary void in the income stream. In addition, the heights to which prices had risen over their prewar levels created the impression that they would first have to move downward some before the economy would start on its way to a postwar revival and prosperity. As a matter of fact, the first few months of 1919 witnessed a slight recession, but this ended by April, and by summer the economy was in the midst of a violent upswing.

*The Upswing: April, 1919–January, 1920; an Inventory Boom*

The pessimists had reckoned without two very important factors. The first was the role of government spending and accompanying Federal Reserve policy; the second was the importance of European postwar demand for American products. A war economy inevitably continues for some time after the cessation of hostilities. It is not (economically) possible for goods in production to be immediately stopped short of completion. If, as is likely to be the case, many war goods are well on their way to completion, production continues until this is accomplished. This means, first, that contracts are not instantly canceled, and even more important, government disbursements continue for some time after peace is declared.

This was precisely the case in the period immediately following the end of World War I. Government (deficit) spending continued on a large scale right up until August of 1919. In the fiscal year ending June, 1919, the Federal deficit totaled 13.4 billion dollars.<sup>1</sup> In the same period the Federal debt mounted by 13.2 billion dol-

<sup>1</sup> *and Monetary Statistics* (Washington, Board of Governors of the Federal Reserve System, 1943), pp. 512–513.

lars.<sup>2</sup> During the calendar year of 1919, the budget deficits of all levels of government amounted to 4.3 billion dollars, a value which was approximately one quarter of the volume of gross capital formation in the private sector of the economy.<sup>3</sup>

As might be expected, the Federal deficits of this period resulted in the flotation of a new Victory Loan of 4.5 billion dollars in the spring of 1919, and as usual the commercial banks found it necessary to finance much of the lending to the government. By the end of 1919 commercial bank holdings of Treasury securities had increased slightly less than 2 billion dollars. During this period of government borrowing, Federal Reserve policy was dominated by the desire to make government borrowing as easy and cheap as possible. Loans secured by Liberty and Victory Bonds had received and continued to receive preferential discount rates at the Reserve Banks right through to the middle of 1921, except for a very brief time at the beginning of 1921. Rediscount rates were set below levels prevailing in the money markets, with the rates on loans secured by war bonds being below coupon rates. By the spring of 1919 Federal Reserve credit had expanded some 2.2 billion dollars.

In June of 1919 the embargo on the export of gold was lifted and quickly there was a rise in gold exports. Federal Reserve authorities hoped that the losses of gold would serve to restrain banks in the granting of new loans. But with rediscount rates below market rates, this was merely wishful thinking. This was evidenced by the rise of member bank indebtedness to the Federal Reserve System that accompanied the gold outflows. For an extended period member banks were, in fact, operating completely on the basis of borrowed reserves.

Adding to the inflationary forces at work in the year 1919 was the vast volume of exports to European countries. The merchandise level of exports in 1919 showed a figure as high as 8 billion dollars, a figure which was approached only once during the decade of the twenties. The foreign demand was helped along by loans totalling some 3 billion dollars made after the war; this money was

<sup>2</sup> *Ibid.*

<sup>3</sup> S. Kuznets, *National Income and Capital Formation, 1919-1935*. (New York, National Bureau of Economic Research, 1937), p. 24.

**Table 13** *Gross National Product and Its Component Parts, 1919-1921\* (in Millions of Dollars)*

|      | (1)<br>Gross<br>National<br>Product<br>Current<br>Prices) | (2)<br>Gross<br>Capital<br>Formation | (3)<br>Net<br>Business<br>Domestic<br>Capital<br>Formation<br>(Exclude<br>Net Changes<br>in Business<br>Inventories) | (4)<br>Net<br>Changes<br>in<br>Business<br>Inventories | (5)<br>Flow of<br>Producer's<br>Durables | (6)<br>Business<br>Construc-<br>tion | (7)<br>Residen-<br>tial Con-<br>struction | (8)<br>Private<br>Construc-<br>tion | (9)<br>Public<br>Con-<br>struc-<br>tion | (10)<br>Consumption<br>(1)-(2) |
|------|-----------------------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------|--------------------------------------|-------------------------------------------|-------------------------------------|-----------------------------------------|--------------------------------|
| 1919 | 68,750                                                    | 19,341                               | 2,699                                                                                                                | + 4,132                                                | 6,234                                    | 2,762                                | 1,732                                     | 4,494                               | 1,422                                   | 49,409                         |
| 1920 | 82,836                                                    | 22,100                               | 2,043                                                                                                                | + 7,375                                                | 6,177                                    | 3,129                                | 1,493                                     | 4,622                               | 1,714                                   | 60,736                         |
| 1921 | 66,148                                                    | 11,488                               | 620                                                                                                                  | + 54                                                   | 3,926                                    | 2,186                                | 2,241                                     | 4,427                               | 1,678                                   | 54,660                         |

\* Source: S. Kuznets, *National Income and Capital Formation 1919-1935* (New York, National Bureau of Economic Research, 1937), pp. 8, 40, and 48.

the remainder of 10 billion dollars which Congress had appropriated for European loans during the war, only 7 billion dollars of which had been loaned. In addition, American exporters were more than willing to grant easy credits to foreign importers, pending the appreciation of European currencies, whose values in terms of the dollar fell during the year as a result of the (greater rate of) inflation in Europe. Extra pressure on the foreign demand for American exports resulted from abnormal purchases of these goods because of the breakdown in other sources of supply. There were, of course, the effects on domestic sources of supply because of war devastation; but there was also the great shortage of shipping, which prevented the purchase of foodstuffs and industrial raw materials elsewhere.

Despite the great sources of expanding monetary demand which we have enumerated, in which, indeed, we did not take account of the vast store of deferred consumer and industrial demand and liquidity, production on the whole did not increase much. The main forces of the upswing were spent on rising prices. Table 15 indicates that the money supply increased by 1.9 billion dollars during 1919. The price index rose by ten points. Percentage-wise, the rise in money supply and prices was approximately the same, indicating that real income was comparatively stable. While trustworthy income data for years before 1919 are lacking, very rough estimates indicate that real national income (*i.e.*, money income corrected for price changes) in 1919 was, at most, only 1 or 2 percentage points above that of 1918. The Federal Reserve Board's index of industrial production indicates that industrial production fell some 6 per cent in the first three months of the year, rose 11 per cent from late spring to late summer, and declined 4 per cent in the closing months of the year.<sup>4</sup>

Examination of Table 13 further reveals that of the 3.6 billion dollar increase in the rate of gross business investment in 1920 over that of 1919, 90 per cent of the increase is accounted for by the 3.2 billion dollar rise in the rate of net investment in inventories in 1920

<sup>4</sup> Estimates for national income are based on figures from the 79th Congress, 1st Session, Senate Committee Print No. 4, *Basic Facts on Employment and Production* (Washington, 1945), p. 16. The figures on the Federal Reserve Board's production of index are taken from the *Annual Reports* of the Federal Reserve Board for the years 1926 and 1927.

over that of 1919. Of course, some of the inventory accumulation in 1920 was undoubtedly involuntary, since the recession started in the early part of the year and gained momentum by the fall of that year. Still, the figures for 1919 show that inventory investment constituted 31 per cent of gross business investment for that year, and this contrasts with a 12 per cent average for the same relationship for the period 1921-1927.<sup>5</sup>

The analysis of the two preceding paragraphs brings out in bold fashion the exact nature of the upswing of 1919. It was a price-inventory spiral, an upswing which, as it proceeded, developed into a tremendous inventory speculation movement. The rapid rise in prices that occurred between 1918 and 1921 (35 per cent) gave rise to a great deal of inventory hoarding in anticipation of further price increases. The 2 per cent or so rise in physical production that occurred during the upswing, together with the great amount of net investment in inventories, attest to the vast amount of hoarding of the latter that must have taken place during 1919. And, of course, this kind of activity served as a reinforcing factor to the price inflation. These two factors—the sluggish reaction of production and (noninventory) investment and the high rate of inventory accumulation—give us a broad clue as to the nature of some of the important underlying factors which acted to bring the upswing to a quick conclusion and convert it, shortly, into a recession with a sharp rate of decline.

***The Downswing: January, 1920–September, 1921; an Inventory Recession***

The recession began very slowly and did not really begin to pick up momentum until the end of the summer of 1920. Why was the upswing so brief? Why, with the tremendous needs for new investment in producer durables and in business and residential construction, did the upswing not develop into a major cyclical expansion?

The answers to these questions are manifold. In the first place, the two mainsprings of the boom suddenly disappeared. The 13.4 billion dollar Federal budget deficit that had existed at the end of

<sup>5</sup> Kuznets, *op. cit.*, p. 42.

the fiscal year in (June) 1919 was reduced to a mere 292 million dollars by the end of the fiscal year in 1920. During the fiscal year ending June of 1921, a budget *surplus* of 514 million dollars developed. Also, between the ends of the fiscal years of 1919 and 1921 1.5 billion dollars of debt was also repaid. Bank holdings of Treasury securities by the end of the calendar year of 1920 were down 1.4 billion dollars below their level of 1919.

Accompanying the reversal of Federal budget policies was a change in the lending policies of the Federal Reserve System, which now felt its hand free of the restraint of supporting government security prices and keeping Treasury borrowing costs low. Rediscount rates at the Reserve Banks rose from 4 per cent in October, 1919 to as high as 7 per cent by June, 1921. The Federal Reserve System pursued its deflationary policy right through the downswing. From a high of 3.5 billion dollars in October, 1920, Federal Reserve credit fell to 1.8 billion dollars in September, 1921, a decline of 1.7 billion dollars.

The effects of these viciously contractionary policies ramified throughout the economy. Member bank discount rates rose, going as high as and hovering about 7 per cent on customer loans and 8 per cent on prime commercial paper until well into 1921. While loans continued to expand until the fall of 1920, in spite of the high borrowing costs, all the evidence indicates that these loans were primarily in the nature of distress loans.

In the usual manner, also, the rise in short-term interest rates gave a push to the already falling long-term bond prices, bond yields on top-grade private securities rising from an average of 5.75 per cent in January, 1920, to 6.38 per cent in the sixth month of the same year, a tremendous jump for long-term rates. Corporate borrowing via the stock market also rose sharply in cost as stock prices reversed their upward swing of 1919 and fell from an index number high of 82.5 to a low of 51.7 in December of 1920.

Table 15 shows what happened to the money supply in this interval of severe, contractionary monetary policy. By the end of 1921 the money supply had fallen 2.8 billion dollars. On top of this the drop in income velocity from 3.45 in 1920 to 3.12 in 1921 reveals a rise in hoarding that developed during the downswing. Much of



this hoarding, no doubt, was of the speculative variety, as people held idle balances not only because of declining security prices, but also held off on all sorts of commodity buying, business and consumer alike, when they were confronted with the rapid rate of price decline that followed in the path of the monetary contraction. Table 15 shows the cost of living index to have dropped 15 per cent during 1921 and another 8 per cent in 1922; wholesale prices dropped even further and faster, falling from 167 in the spring of 1920 to 91 by January 1922, a decline of 45 per cent.

Monetary contraction was not the only source of deflation, however. The extremely high level of merchandise exports, so important during the upswing of 1919, dropped suddenly, particularly in the end months of 1920. During the year of 1921, the level of merchandise exports dropped almost in half; where they had totalled 8.2 billion dollars in 1920, exports in 1921 fell to 4.5 billion dollars. The deflationary influences on national income which this event must have exerted should be obvious, indeed. There are a number of reasons for this turn of events on the international scene, some foreign, some domestic.

One of the reasons for the sharp decline in U.S. exports was the increase in the amount of shipping available to bring exports, especially farm commodities, from Argentina, Australia, and New Zealand. Another important factor was the American inflation, which raised the prices of American exports to such levels as to cause the European countries to exhaust their money balances in the U.S. quickly. Moreover, inflation had developed in Europe at an even more rapid pace than it had in America, with the result that foreign currencies deteriorated in value relative to the dollar; in this way American exports were made still dearer. There was also the factor of European recovery, the slow rise in farm production there enabling the countries of the continent to turn gradually to domestic sources of supply.

Once the speculative boom broke, it tended to rush downward in the same manner it had rushed forward. Industrial, commercial, and consumer buying all stopped in anticipation of lower prices. The speculation on a rise in prices during the upswing simply gave way to speculation on a fall in prices in the downswing. The out-

standing example of this fact is the overwhelming rate of decrease in net investment in inventories. Of the 10.5 billion dollar decline in gross investment below that of 1920 that took place in 1921, 70 per cent of this is explained by the decline in net investment in inventories shown in Table 13. Much of the decline in gross business investment in plant and equipment is probably explainable as a fall in induced investment. There were other factors at work, however, which we shall examine presently.

That the recession was both sharp and severe is attested by the 10.5 billion dollar decline in gross investment that occurred in 1921. The Federal Reserve Board's industrial production index shows production to have fallen some 31 per cent within a space of 13 months following its downturn in February, 1920. Employment fell 36 per cent in the 16-month interval between March of 1920 and July of the following year. Hourly wage rates dropped some 16 per cent in the year 1921. The terrific drop in prices we have already discussed.

### *The Lack of Autonomous Investment*

We have so far left unexplained the extremely small rise in production that characterized the boom of the cycle under discussion. In particular, there needs to be explained the mere 400 million dollar rise in gross business investment and the small 0.1 billion dollar rise in private construction activity. Physically, there seem to have been most of the prerequisites for a great surge in the demand for physical plant and equipment and in residential construction. And this was the case, but not *psychologically*.

Here we come face to face with the expectations factor. For the most part, all the influences on expectations pointed toward a recession in the postwar period. First, there was the pessimism and uncertainty that dominated the outlook of most businessmen at the end of the war. The fear of at least temporary collapse following the anticipated contraction in government expenditures acted as a force dictating the postponement of investment outlays pending the postwar recession.

When the postwar recession failed to materialize, two other factors stepped in to cause a postponement of much investment pend-

ing, again, a recession. In Chapter 11, it may be recalled, we noted the fact that when upswings are marked by inflationary price movements that carry prices far above their previous norms, there develops increasing skepticism concerning the ability of the price movement to continue. This was undoubtedly a vital factor in the failure of business investment in plant and equipment to assume the volume that might otherwise have been expected of it.

The expectations of a price collapse were reenforced by sharp upward movement in wage rates that took place. Between the end of 1918 and the end of 1920, hourly wage rates rose 88 per cent, rising 50 per cent within the year 1920 alone! This sweeping rise in wage rates is to be explained partly by the full employment of the labor force and partly by the feverish display of trade union activity in the immediate postwar years. Strikes paralyzed production in many critical areas of industry, such as steel.

The runaway rise in prices and wages certainly was not calculated to raise the marginal efficiency of capital; on the contrary, it had the effects of reducing it, at least in the short run. Just as they were sure that the current price level could not last and would have to recede so businessmen were also sure that the currently high earnings on fixed investments were sure to decline. The marginal efficiency of capital was also reduced because of the inflated level of wage rates, which served to raise the supply prices of capital goods excessively.<sup>6</sup> This effect was supported by the expectations that the wage levels themselves would soon fall.

In certain respects the situation was not unlike that visualized by the monetary overinvestment theorists. However, a shortage of

<sup>6</sup> If the reader will recall the discussion of the marginal efficiency of capital in the chapter on Keynes, the depressive effects of the expected fall in prices and the currently inflated wage levels on the marginal efficiency of capital will be clear. In Chapter 4 we defined the marginal efficiency of capital as the discount rate which would just equate the present value of a future revenue stream of a capital good with its current supply price. Given the supply price, it is clear that if the revenue stream declines in value, the rate of discount must fall in order to maintain or achieve equality between the present value of the future income stream and the supply price of the capital good. Given the future revenue stream, a rise in the supply price will also necessitate a fall in the marginal efficiency of capital in order to raise the present value of the revenue stream. Thus when the value of the expected future revenue stream falls at the same time that the supply price rises, a double barreled pressure is exerted on the marginal efficiency of capital.

capital, in the form of a reduction in bank credit did not appear until after the downturn had set in. The rate of starts in new building construction was already on the downgrade by the fall of 1919, and the same was true of stock prices by the late part of the year. However, the raising of the Federal Reserve rediscount rates may have acted as a storm warning and an advance signal of future deflationary policies on the part of the monetary authorities. In consequence of such actions, which, incidentally, also provided an act of confirmation of prevailing expectations regarding the future course of prices, a cautious attitude on the part of businessmen would certainly have been a logical outcome. Certainly, the adequacy of this analysis is partly borne out by the extraordinarily large portion of total investment that was devoted to inventory accumulation; inventory investment was at least an outlet in which funds would not be irretrievably tied up in the event of a recession.

Our analysis would not be complete, if we failed to take account of the wide prevalence of bottlenecks, the second of the two factors explaining the dearth of investment outlays. In the first two years of the postwar period, the economy achieved as full a level of employment as was possible, given the existence of seasonal, frictional, and technological factors. The amount of unemployment in the two-year period averaged no more than 4 to 5 per cent of the available labor supply. This figure is to be compared with the average of 10 per cent for the whole decade of the highly prosperous twenties.<sup>7</sup> Applying the analysis we developed in the previous chapter, we can see what the effects of such severe labor shortages on the higher stages of production must have been. Essentially, the effects are describable in terms of a broadly interpreted acceleration principle. In order for the higher stages of production to maintain a full volume of output once they have expanded (they had expanded in many areas to meet the demands of war), both autonomous and induced demand for capital goods must maintain at least a steady rate of growth. However, the widespread shortages of labor throughout all industry in 1919 and 1920 acted to prevent the necessary rate of expansion, not only in the consumer goods indus-

<sup>7</sup> Cf. S. Kuznets, *National Income and Its Composition, 1919-1938* (New York, National Bureau of Economic Research, 1941), p. 151.

**Table 14 Gross National Product and Its Component Parts, 1921-1933 \* (in millions of dollars and current prices)**

| Year | (1)<br>Gross<br>National<br>Product<br>(Current<br>Prices) | (2)<br>Gross<br>Capital<br>Formation | (3)<br>Net<br>Business<br>Domestic<br>Capital<br>Formation<br>(Exclusive<br>Net Changes<br>in Business<br>Inventories) | (4)<br>Net<br>Changes<br>in Business<br>Inventories | (5)<br>Flow of<br>Producer's<br>Durables | (6)<br>Business<br>Construc-<br>tion | (7)<br>Residen-<br>tial Con-<br>struction | (8)<br>Private<br>Construc-<br>tion | (9)<br>Public<br>Construc-<br>tion | (10)<br>Consumption<br>(1)-(2) |
|------|------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------|--------------------------------------|-------------------------------------------|-------------------------------------|------------------------------------|--------------------------------|
| 1921 | 66,148                                                     | 11,488                               | 620                                                                                                                    | + 54                                                | 3,936                                    | 2,186                                | 2,241                                     | 4,427                               | 1,678                              | 54,680                         |
| 1922 | 67,186                                                     | 13,282                               | 1,338                                                                                                                  | + 534                                               | 3,848                                    | 2,783                                | 3,524                                     | 6,307                               | 2,076                              | 53,904                         |
| 1923 | 78,214                                                     | 18,199                               | 2,565                                                                                                                  | + 3,016                                             | 5,267                                    | 3,300                                | 4,422                                     | 7,722                               | 1,921                              | 60,015                         |
| 1924 | 78,791                                                     | 15,245                               | 2,618                                                                                                                  | - 917                                               | 4,962                                    | 3,513                                | 4,713                                     | 8,226                               | 2,264                              | 63,548                         |
| 1925 | 83,413                                                     | 19,211                               | 3,395                                                                                                                  | + 1,788                                             | 5,287                                    | 4,062                                | 5,202                                     | 9,264                               | 2,546                              | 64,202                         |
| 1926 | 88,780                                                     | 19,037                               | 3,532                                                                                                                  | + 1,596                                             | 5,716                                    | 4,366                                | 4,757                                     | 9,123                               | 2,470                              | 69,743                         |
| 1927 | 86,778                                                     | 18,208                               | 3,481                                                                                                                  | + 464                                               | 5,461                                    | 4,477                                | 4,524                                     | 9,001                               | 2,786                              | 68,570                         |
| 1928 | 90,053                                                     | 17,824                               | 3,563                                                                                                                  | - 321                                               | 5,852                                    | 4,385                                | 4,255                                     | 8,640                               | 2,932                              | 72,229                         |
| 1929 | 93,640                                                     | 20,298                               | 4,355                                                                                                                  | + 2,414                                             | 6,908                                    | 4,581                                | 3,010                                     | 7,591                               | 2,928                              | 73,342                         |
| 1930 | 82,723                                                     | 13,662                               | 2,534                                                                                                                  | - 1,128                                             | 5,480                                    | 3,800                                | 1,805                                     | 5,605                               | 3,023                              | 69,061                         |
| 1931 | 64,751                                                     | 8,464                                | - 290                                                                                                                  | - 1,375                                             | 3,536                                    | 2,232                                | 1,262                                     | 3,494                               | 2,615                              | 56,287                         |
| 1932 | 47,202                                                     | 3,147                                | - 2,084                                                                                                                | - 2,461                                             | 2,019                                    | 1,097                                | 444                                       | 1,541                               | 1,955                              | 44,055                         |
| 1933 | 46,538                                                     | 4,268                                | - 1,934                                                                                                                | - 1,129                                             | 2,051                                    | 936                                  | 392                                       | 1,328                               | 1,902                              | 42,270                         |

\* Source: S. Kuznets, *National Income and Capital Formation 1919-1935* (New York, National Bureau of Economic Research, 1937), pp. 8, 40, and 48.

tries, but also in the lower stages of capital goods construction. That is to say, autonomous as well as induced investment were caught in the stranglehold of labor bottlenecks. On top of the latter, the railroad industry, despite the terrific "beating" it took during the war for lack of replacement, found itself unable to acquire new equipment fast enough. The result was a breakdown in railroad transportation in 1920. The "transportation crisis" of this period severely aggravated the bottleneck problem. This problem was not confined to any particular industry, and it certainly rates being listed as one of the two basic reasons for the failure of autonomous and induced investment in plant and equipment to take up the slack and carry the economy upward in a prolonged period of steady prosperity.

Yet the importance of aggregate (gross) investment certainly must not be discounted. As can be observed from the figures in Table 14, it was the continued fairly strong rate of gross investment in 1921 which kept the national income from falling further than it did, provided the basis for a quick and speedy recovery from the low levels reached in 1921, and was basic to the steady period of major cyclical upswing from the fall of 1921 to the fall of 1929. We shall presently see that it was the high level of autonomous investment during the twenties, founded on the high level of construction activity, in the first part of the upswing, and the tremendous rate of technological development and growth in certain areas of industry, which, as usual, played the lead role in the expansion of the twenties.

#### THE MAJOR UPSWING OF 1921-1929: ITS GENERAL ASPECTS

The outlines of the major movements of the 1920's may be observed in Table 14. The period from the fall of 1921 to the fall of 1929 was marked by a steady growth in national income, employment, and national well-being. The Federal Reserve System's in-

<sup>b</sup> The one major blot on the record of the 1920's was the apparent failure of the growth in output and employment to keep pace with the growth in the labor force. Unemployment in the twenties averaged some 10 per cent of those seeking employment, as compared with the normal 3 or 4 per cent that is allowed as frictional, etc., unemployment. Despite the extremely heavy rate of investment that prevailed during the twenties, not so many more workers

Table 15 Behavior of Money and Prices, 1919-1933

| Year | (1)<br>Money Supply *<br>(M + M')<br>(millions of dollars) | (2)<br>Gross<br>National<br>Product<br>(millions of dollars) | (3)<br>Income<br>Velocity<br>2 1 | (4)<br>Cost of Living *<br>Index<br>1935-1939 = 100 |
|------|------------------------------------------------------------|--------------------------------------------------------------|----------------------------------|-----------------------------------------------------|
| 1919 | 21.6                                                       | 68.75                                                        | 3.18                             | 118                                                 |
| 1920 | 24.0                                                       | 82.84                                                        | 3.45                             | 143                                                 |
| 1921 | 21.2                                                       | 66.15                                                        | 3.12                             | 128                                                 |
| 1922 | 21.6                                                       | 67.19                                                        | 3.11                             | 120                                                 |
| 1923 | 23.0                                                       | 78.21                                                        | 3.40                             | 122                                                 |
| 1924 | 23.3                                                       | 78.79                                                        | 3.38                             | 122                                                 |
| 1925 | 25.1                                                       | 83.41                                                        | 3.32                             | 125                                                 |
| 1926 | 25.8                                                       | 88.78                                                        | 3.52                             | 126                                                 |
| 1927 | 25.7                                                       | 86.78                                                        | 3.38                             | 124                                                 |
| 1928 | 26.1                                                       | 90.05                                                        | 3.45                             | 123                                                 |
| 1929 | 26.5                                                       | 93.64                                                        | 3.53                             | 123                                                 |
| 1930 | 25.4                                                       | 82.72                                                        | 3.45                             | 119                                                 |
| 1931 | 23.9                                                       | 64.75                                                        | 2.71                             | 109                                                 |
| 1932 | 20.7                                                       | 47.20                                                        | 2.28                             | 98                                                  |
| 1933 | 20.0                                                       | 46.54                                                        | 2.33                             | 92                                                  |

\* Source: *Federal Reserve Bulletin*, 1950.

dex of industrial production rose steadily during the twenties, from a low of 58 in 1921 to a high of 110 in 1929. *Net* national product in real terms (a better measure of growth in national well-being than gross national product) also rose by the astounding amount of 28.7 billion dollars in the same interval. Real income per capita rose from \$507 a year in 1921 to \$687 annually in 1929.

The reasons for both the steady level of prosperity and steady rise in national income are closely related. On the surface, there was the tremendous rate of capital formation that took place in the period under consideration. It was this factor, largely autonomous investment, too, which kept the national income at high levels even in the face of occasional deflationary influences. Its origins were manifold. There was, first of all, the tremendous rate of construction activity per annum, residential and nonresidential. On top of

were employed; in fact, if allowance is made for the growth of population, it is possible that the increase in capital stock may even have resulted in some displacement of workers. Professor Schumpeter's explanation of this would be that the twenties were on the downswing of a Kondratieff long wave, during which there is always marked unemployment, even during major cyclical upswings.

this came what might be called a little "industrial revolution. This wave of technological progress manifested itself both in the form of increased productivity and a wave of new products, particularly consumer durables.

### *The Role of Technological Progress*

An almost unprecedented rate of increase in productivity took place in the twenties. Professor Mills<sup>9</sup> has estimated that production increased at a cumulative rate of 3.8 per cent per annum. Output per wage earner went up 22 per cent between 1923 and 1929. The rise in worker productivity will be seen to have been actually greater when cognizance is taken of the aforementioned failure of the economy to absorb much of its annual growth in the labor supply.

While some of this rise in productivity may be attributed to some growth in the stock of capital per worker, most of it seems to have been the product of technological progress. For the most part, indications are that growth of product and capital pretty much kept pace with each other. This fact offers fairly conclusive evidence of the overwhelming importance of technological progress as the main-spring behind both the growth in labor productivity and (aside from residential construction) the great rate of net investment, public and private.

Evidence of the influences of technological progress on net investment is certainly not lacking either. Leading the parade during the twenties was the automobile industry. The (investment) ramifications of the expansion of the automobile industry during the period were enormous and virtually incalculable. The annual value of passenger car output increased from 1.4 billion dollars in 1919 to 2.8 billion dollars in 1929; the volume of passenger car production rose from some 2.2 million in 1920 to 5.5 million in 1929. This tremendous surge in automobile production naturally carried with it great expansions in subsidiary supply industries. According to Mills,<sup>10</sup> petroleum output rose 77 per cent during the period 1923-

<sup>9</sup> F. C. Mills, *Economic Tendencies in the U.S.A.* (New York, National Bureau of Economic Research, 1932), p. 530.

<sup>10</sup> *Ibid.*, p. 292.



1929, as compared with a rise of 19 per cent for the average of manufacturing as a whole in the same interval. Rubber manufacturers expanded 39 per cent and steel works and rolling mills 24 per cent in the same period. All the foregoing industries were right among the leaders in the growth of industrial output during the twenties, placing themselves among the first six. Their importance for investment outlets is further seen in the fact that the motor vehicle, iron and steel and petroleum refining industries ranked first, third, and fifth, respectively, in the nation in value of total output for 1929. Finally, we cannot omit the impetus that the automobile gave to highway construction during the twenties; approximately 10 billion dollars was spent on public roads during this decade.

The automobile industry and its subsidiary suppliers, etc., were not the only ones to burst forth in a surge of growth. The electric power industry spent an estimated 8 billion dollars on new investment in the twenties. Capital expenditures by the telephone industry approximated some 2.5 billion dollars.<sup>11</sup>

### *The Rise of Consumer Durables*

One of the most significant developments of the twenties was the tremendous growth in importance of consumer durables. Aside from automobiles, the area of greatest growth in this category of production lay in that of household appliances, and, among the latter, the increase in output of radios and electric refrigerators dominate the scene. Output of consumer durables as a whole rose some 72 per cent in the period 1922-1929. Annual production of household appliances, exclusive of radios and refrigerators rose some 200 million dollars in the period 1921-1929, virtually a 100 per cent increase. But the most important areas of expansion in the realm of consumer durables were those of radio and electric refrigerators. The yearly rate of refrigerator production increased from 13.3 million dollars in 1921 to 111.7 million dollars in 1929. Radio production rose astronomically from 13.3 million dollars annually to 253.3 million dollars between 1923 and 1929.

<sup>11</sup> The figures on investment by the telephone and electric power industries are taken from A. H. Hansen, *Fiscal Policy and Business Cycles* (New York, W. W. Norton & Company, 1941), p. 40.

The foregoing facts and figures serve to emphasize a very important point, one which has been noted by Professors Schumpeter and D. H. Robertson, among others. This is that every major cyclical expansion in economic activity always finds one or two industries showing the way. The latter are usually the result of the invention of some new technique of production or the discovery of totally new products. The impact of these new industries is usually economy-wide, giving rise to vast investment opportunities not only in themselves, but also in numerous supplying, subsidiary industries, new and old alike. Thus the great expansion of the railroads provided the basis for most of the major prosperities of the second half of the nineteenth century, and in the first quarter of the twentieth century we had the major periods of upswing dominated by the public utility industries and the automobile, plus certain other consumer durables.

### *The Importance of Construction During the Twenties*

Perhaps no single factor was more important to the continuous major upswing of the twenties than the high rate of private construction that was maintained throughout the twenties. In fact, no one factor explains better the sharp contrast between the prosperity of the twenties and the stagnation of the thirties than does the difference in the annual rates of private building activity. In the period 1921-1929 total private construction averaged 7.8 billion dollars a year, while in the period 1933-1939 this variable averaged 2.3 billion dollars, a great difference of 5.5 billion dollars (on the average) annually.

It might be said, with some merit, that these facts about aggregate private construction really add very little to what has already been pointed out in the immediately preceding paragraphs. For it is apparent that the high level of construction activity of the twenties must have been associated largely with the boom of the automobile and other consumer durables of the period, and with the large outlays in the public utility industries, besides accumulated replacement demand.

In reply, one might say that such a statement is only half true. *Residential* construction averaged about 53 per cent of total private

construction in the period 1921-1929, proceeding at an average annual rate of 4.1 billion dollars; in sharp contrast, residential construction during the 1933-1939 period averaged only 1.1 billion dollars a year, a difference of 3.0 billion dollars annually, on the average. Thus 54 per cent of the decline in total private construction in the thirties below that of the twenties is accounted for by the decline in residential construction.

Historical experience and data indicate, as one would expect, that major upswings which coincide with an upswing in building construction are strong and vigorous. Those major expansions that occur during a trough in construction activity are weak and anemic; they usually have many of the characteristics of stagnation.<sup>1</sup> Of course, to a very large extent the factors that give rise to major business cycle upswings are the same as those that are at the bottom of a large segment of building activity. These factors are primarily technological innovations which require large amounts of new investment both in plant and equipment. To the extent that this is true, it might perhaps be better to ascribe the depth and duration of prolonged depressions, when these coincide with depressions in construction activity, to troughs in the cycles of *residential* construction. In the same manner, we might assert that when major business upswings, vigorous and buoyant, coincide with upswings in the building cycle, a large amount of the strength and force of the business boom might be associated with the boom in residential construction activity. We say this, we repeat, because of the strong likelihood that the factors that give rise to major cyclical expansions in business activity, *viz.*, factors of technological innovation, will be much the same as those which account for an upswing in the cycle of business plant construction.

### *The Bases of the Residential Construction Boom of the Twenties*

On the basis of the position taken in the last paragraph, we may say that the factors which explain the high rate of business construction during the twenties are the same as those which have been adduced earlier as the major explanation of the (autonomous) upswing in general business activity. We want now to examine the

<sup>1</sup> 12 Cf. Hansen, *op. cit.*, pp. 22-27.

underlying bases of the high rate of residential building in the same period.

The initial impetus to the upswing in residential construction that got under way in 1922 derived from the long accumulated demand carried over from the war period. This accumulation of demand, in turn, had its origins in the severe lack of replacement that accompanies every war period, and, in addition, the failure to provide adequately for the growth in population that took place during the war period and the first three postwar years. Evidence of the severity of the housing shortage is seen in the fact that rents rose well over 60 per cent in the period 1916-1920, and continued to rise sharply right in the midst of the recession of 1920-1921.

Examination of Table 14 reveals that the residential construction boom was slow to get started in the first postwar years, despite the large volume of deferred demand. One of the reasons was undoubtedly the extremely tight labor supply of this period. Accompanying the severe labor shortages were, naturally, the extremely high level of wage rates discussed earlier. It will be recalled further that most businessmen were convinced that the inflation of prices and wages could not continue, and this attitude characterized construction as much as other areas of activity. When the recession came, it brought wage rates down considerably in many (geographical) areas of the building industry, and as soon as this happened, in combination with the continued rise in rents, the upswing in residential construction began.

Sustaining and adding to the stimulus given by the deferred war demand was a series of developments that took place later in the twenties. First among these was the growth in population that took place during this period. Population grew by some 15 million in the period 1920-1929, providing the largest absolute increases per year in the experience of the United States. There were also large amounts of internal migration during this period, particularly a large exodus from rural to urban areas (under the impetus of improved means of transportation, such as the automobile).

In addition, there were the strong increases in real income per capita during the twenties, increases which affected to a great extent all income brackets. As these rises in real income proceeded

and bade fair to continue, they may be expected to have given rise to stronger demands for new and better housing. Adding to the stream of demand for housing was the rise in speculative incomes from the stock market, which undoubtedly contributed its share to the rate of demand for housing. We have mentioned earlier the tendency for the bulk of speculative incomes to go into consumer durables and in the latter must be included housing.

Once started, the building boom, under the impetus of the forces just mentioned, gradually gained sufficient momentum to invite a great deal of speculative activity. The reader will recall the discussion of the building industry in the United States in Chapter I. There we emphasized the extreme speculative character of the building industry in this country. Producing units are in the habit of working on a shoestring, of operating with almost no equity. Given the slowness with which a construction boom gets under way, the opportunities for speculative building become rampant when most of the capital can be borrowed. And in the latter part of the twenties the commercial banks went in for real estate loans in a big way, so that prospective builders had little difficulty in obtaining funds. The extent to which the commercial banks were willing lenders in the speculative spurt of construction activity in the late twenties is seen in the large number of banks which had to close their doors in 1932 because of an inability to liquidate real estate loans. The extreme speculative nature of the building boom, which pervaded the industrial and commercial spheres of building activity as well as the residential component, resulted in a tremendous overexpansion in building construction—a complete saturation, no less—which explains to a great extent the extreme slump in aggregate building activity in the thirties.

The peak of the residential construction boom was reached in 1925, when this category of construction reached the unprecedented height of 5.2 billion dollars. Thereafter the yearly rate of construction slackened steadily, declining over 2 billion dollars by the end of 1929. Through 1928, it declined approximately 900 million dollars. But  $\frac{2}{3}$  of this decline was offset by the continued rise in construction from the business and public domains, each contributing an increase of some 400 million dollars per year. Incidentally, the

reader's attention is called to the importance of the level of public construction activity during the twenties. Despite all the hullabaloo attaching to the level of government spending during the thirties, examination of column 7 in Tables 14, 16, and 19 will reveal the very interesting fact that the annual rate of public construction of the thirties never surpassed the peak spending of the last three years of the twenties until 1941! In fact, the yearly average for the period 1921-1930 was 2.5 billion dollars, while that of the period 1933-1940 was 1.9 billion dollars.

*The Increasing Importance of Durable Goods Production in the Twenties*

One of the outstanding developments of the twenties was the great importance that the production of durable goods, especially consumer durables, came to have. Between 1922 and 1929, the production of consumer durables rose some 72 per cent. As a fraction of national income, the production of durable consumer goods rose from 11.8 per cent in 1921 to 14.5 per cent in 1929. On the other hand the production of perishable consumer goods fell from 46.5 per cent of the national income in 1921 to 41.8 per cent in 1929.

Along similar lines, the production index of consumer goods rose 31 per cent between the years 1922 and 1929, while the production index of capital goods rose approximately 70 per cent. In the short period of 1928-1929 the production of consumer goods rose 6 per cent while that of capital goods rose 19 per cent. The production of *all* durable goods (consumer and producer alike) increased about 59 per cent between the years 1922 and 1929. In rather sharp contrast, the production of all nondurables rose some 23 per cent in the same time interval.

Two important results accrued from these developments, one possibly yielding some insight into the nature of the collapse of 1929, and the other, while also shedding light on the same subject, perhaps providing a key to future cyclical movements in the U.S. economy. In the first place, the great disparities in the rates of growth of the indexes of consumer and capital goods production suggest that perhaps too much capital goods production may have taken place in the twenties, particularly in the later stretches, rela-

tive to the production of consumer goods. The complete collapse of investment after 1929 could be taken as a partial indication of this. The widespread existence of excess capacity even before the break also suggests something of the sort.<sup>11</sup> This excess capacity was undoubtedly made even greater by the tremendous rate of growth in productivity made possible by the rapid rate of technological progress during the twenties.

There are, of course, no objective criteria which would enable us to determine the appropriate proportions that must be maintained between investment and consumption goods production if severe depressions are to be avoided. Even if we knew the correct proportions, there is the question whether sufficient mobility of factors exists to permit speedy shifts in employment among the different stages of production, especially in the presence of tight credit conditions, such as may prevail at the top of an upswing.<sup>12</sup> There is little doubt, however, that a temporary saturation in investment, made most evident by the widespread conditions of excess capacity, developed in many lines of production, and contributed no end to the severity of the contraction and the depression of the thirties. A less rapid rate of investment during the twenties, with proportionately more resources devoted to the production of consumer goods, *might*, at least, have permitted the prosperity of the twenties to continue a few years longer. However, this suggestion, too, carries some implicit assumptions about the behavior of the propensity to consume, namely, that it would have risen fast enough to assure an adequate rate of absorption of a greatly expanded rate of consumer goods output. All these suggestions, unfortunately, must remain within the realm of pure conjecture.

<sup>11</sup> A good deal of the excess capacity which developed in the twenties must be ascribed to a change in the practices of holding inventories. The recollection of the experiences with large inventory holdings during the recession of 1921 made the business community (particularly wholesalers) extremely reluctant to stock up, and so provide for the smooth meeting of seasonal and other variations in demand. This refusal to build up inventories was further reinforced by expectations of lower prices during the twenties. The effect of this attitude on the part of wholesalers was to cause manufacturers to expand to meet peak demands, instead of adjusting capacity to meet some average level of demand. Large amounts of excess capacity no doubt resulted from these attempts by manufacturers to satisfy peak demands.

<sup>12</sup> This point has been discussed at some length in Chapter 11, pp. 382-383.

The increasing importance of consumer durables in the flow of the national product stream added a further element of instability to an economy already given to wide fluctuations in economic activity. The significance of durable consumer goods is, as we have noted earlier, that their demand is a deferrable one, so that in depression it falls off much more than the demand for nondurables. Moreover, during the twenties much of the increase in demand for consumer durables was centered on goods that were then, at least, primarily in the nature of luxury items, like automobiles and radios. This situation made for a still greater decline in demand once the break came. As we have also noted earlier, however, the existence of a larger proportion of consumer durables in the aggregate flow of goods will not only add to the severity of major cyclical contractions, but will add to the intensity of major upswings. To the accumulated volume of replacement of producer goods that is a common product of major depressions is now added a similarly accumulated volume of durable consumer goods. The much wider fluctuations in durable goods industries relative to those in nondurable goods industries is now a commonplace. It is fairly obvious that the growth to great importance of consumer durable goods industries will serve to add to the number of industries which show the greatest amount of cyclical instability.

Nor can we leave out the growth in importance of consumer credit as a means of financing the purchase of consumer durables. This method of financing came into its own in the late twenties and today occupies a position of paramount importance in the eyes of the monetary authorities. From a peak of 7.6 billion dollars in 1929, the total volume of consumer credit fell to a low of 3.9 billion dollars in 1933, a decline of 49 per cent. By 1940 it had risen again to 9.1 billion dollars, and in June of 1950 had reached a total of 19.6 billion dollars, a volume almost five times that of 1933. It is clear that such movements in this variable add greatly to the instability of the system, because they produce an added income stream in periods of expansion and a diminished income stream in times of contraction.

The twenties thus produced two additional, albeit interrelated, sources of cyclical instability. First came the great increase in im-



portance of durable consumer goods production, and with it was intimately associated the greatly increased role that consumer credit now plays in the modern economy. *Ceteris paribus*, both developments assure that the major business cycles of the future may tend to be of somewhat greater amplitude and intensity than their counterparts of the past.

### *The Role of Consumption in the Twenties*

The role of consumption in the decade under examination is to be seen in Table 16. There we have presented what we may call a very rough statistical approximation of the average propensity to consume (in column 4), the behavior of the rate of growth of consumption in the course of the decade (column 2), and the relationships, if any, that may exist between these variables and the rate of net investment in inventories and in business plant and equipment.

Perhaps the outstanding feature of the behavior of consumption in the decade of the twenties was the comparative stability of the average propensity to consume over the entire decade, despite the remarkable rise in national income that characterized the period. While the average propensity to consume displays definite short-period variability, there is certainly no tendency for it to decline over the course of the whole decade. Its value in 1928 was approximately the same as it was in 1922. Apparently, the people of the United States were able to adjust their living standards upward with only short lags, lags of no more than a couple of years. Of undeterminable importance in the ability of people to adjust their living standards upward with such facility was undoubtedly the growth in credit-financed consumer expenditures and the great rise in speculative incomes that took place in the latter part of the decade.

If no trend in the direction of a decline in the average propensity to consume is evident for the whole decade, short-period fluctuations in its value appear in Table 16. As a matter of fact, each of the years of *minor* (inventory) recession was preceded by a decline in the average propensity to consume, and each of the minor upswings was preceded by a rise in the average propensity to consume. Thus the inventory recession of 1924 was preceded and per-

haps initiated by a drop of three percentage points in the figure for this factor, while the inventory upswing following apparently derived some stimulus from the four-point rise in the average propensity to consume in 1924. The figure dropped again four points in

**Table 16 Consumption and Business Investment, 1919-1933 \***

| Year | (1)<br>Net<br>Changes<br>in Business<br>Inventories<br>(in millions of<br>dollars) | (2)<br>Net<br>Business<br>Capital<br>Formation<br>(Excludes<br>of Net<br>Changes in<br>Business<br>Inventories)<br>(in millions of<br>dollars) | (3)<br>Rate of<br>Growth<br>of Con-<br>sumption | (4)<br>Consumption<br>as a Percentage of<br>Gross National<br>Product |
|------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------|
| 1919 | + 4,132                                                                            | 2,699                                                                                                                                          |                                                 |                                                                       |
| 1920 | + 7,375                                                                            | 2,043                                                                                                                                          | .23                                             | .73                                                                   |
| 1921 | + 54                                                                               | 620                                                                                                                                            | .10                                             | .83                                                                   |
| 1922 | + 534                                                                              | 1,338                                                                                                                                          | .01                                             | .80                                                                   |
| 1923 | + 3,016                                                                            | 2,565                                                                                                                                          | .11                                             | .77                                                                   |
| 1924 | - 917                                                                              | 2,618                                                                                                                                          | .06                                             | .81                                                                   |
| 1925 | + 1,788                                                                            | 3,395                                                                                                                                          | .01                                             | .77                                                                   |
| 1926 | + 1,586                                                                            | 3,532                                                                                                                                          | .09                                             | .79                                                                   |
| 1927 | + 464                                                                              | 3,481                                                                                                                                          | .02                                             | .79                                                                   |
| 1928 | - 321                                                                              | 3,563                                                                                                                                          | .05                                             | .80                                                                   |
| 1929 | + 2,414                                                                            | 4,355                                                                                                                                          | .02                                             | .78                                                                   |
| 1930 | - 1,128                                                                            | 2,534                                                                                                                                          | .06                                             | .83                                                                   |
| 1931 | - 1,375                                                                            | - 290                                                                                                                                          | .18                                             | .87                                                                   |
| 1932 | - 2,461                                                                            | - 2,084                                                                                                                                        | .22                                             | .93                                                                   |
| 1933 | - 1,129                                                                            | - 1,934                                                                                                                                        | .04                                             | .91                                                                   |

\* Adapted from Tables 13 and 14.

1926 and then made only a two-point recovery in the next two years, seeming to provide some of the downward force on business investment in the very slight recession of 1927.

We may inquire into the nature of the forces that kept the economy from plummeting into a major downswing in each of the recessions of the minor cycles in the years 1921-1924 and 1924-1927. That is, what contained the deflationary forces in each of the minor recessions and kept them from developing into major contractions? As the reader probably suspects, the answer is the tremendous rate of *autonomous* investment that proceeded through the twenties. In-

duced investment, particularly in inventories, and in 1927 also slightly in business equipment, responded to the declines in the ratio of consumption to income sufficiently to produce two minor cycles, but these were kept minor by the continuing surge in autonomous investment.

In 1929 the offsetting effects provided by autonomous investment were gone. Many such channels, already discussed, had reached the point of saturation, at least temporarily. If the economy was to maintain its upward progress what was required at this point was a sharp upward movement in the average propensity to consume. Instead, as the figures show, 1929 was marked by a decline in the average propensity to consume and the rate of growth of consumption. At this time what earlier would have been a minor recession became the beginning of perhaps the most catastrophic contraction and depression in the nation's history. Accompanying the contraction of induced investment in response to the fall in the average propensity to consume was the collapse in autonomous investment, which, in turn, reduced income and consumption still more and, therefore, induced investment again, and so on, in the now familiar process of cumulative contraction.

We repeat a remark we made earlier in Chapter 11. While no positive role may be assigned to consumption in the collapse of 1929, a sort of negative underconsumptionist approach may perhaps be used to describe the origins of the collapse. By this we mean that a crisis and collapse could have been averted in 1929 if the consumption function had risen sufficiently to compensate for the decline in the investment schedule. Actually, just the opposite occurred, and the economy was precipitated into a period of vicious contraction. In reality, perhaps, we have no "right" to impute such guilt to the average propensity to consume in view of its historical stability.<sup>15</sup> For the breakdown of 1929, at least, the guilt must be

<sup>15</sup> Care must be taken not to misinterpret this statement. The remark does not deny that the amount of consumption has risen historically. On the contrary, we have repeatedly described the ability of consumption to rise over longer time periods in conjunction with the growth in national income. However, the percentage of national income devoted to consumption, the average propensity to consume, has remained remarkably constant over the long haul of time.

placed squarely at the feet of the collapse in autonomous investment.

An attempt has also been made to observe the workings of the acceleration effects. Column 3 in Table 16 indicates the movements in the *rate* of growth of consumption in the twenties, for this variable lies at the heart of the acceleration principle or relation. Unfortunately, there appears to be a measure of inconsistency in the effects of changes in the rate of growth of consumption on investment. The period 1919-1923 shows a strong interconnection between changes in the rate of growth of consumption and investment. Thus the sharp reduction in the rate of decline of consumption between 1921 and 1922 seems to have induced a fairly large amount of investment in business inventories and plant and equipment. Then the 12 per cent rate of growth in consumption between 1922 and 1923 seems to have been at least partly responsible for the increase in the rate of investment that took place in 1923. The 5 per cent drop in the rate of growth of consumption between 1923 and 1924 might partly explain the precipitous drop in inventory investment from a high positive to a negative figure between the latter two years.

The rate of growth of consumption fell by another 5 per cent between 1924 and 1925, but business investment, particularly in inventories, bounded upward. Nor was the reaction of business investment in 1926 what one would expect of the acceleration effect from the 8 per cent rise in the rate of growth of consumption that occurred between that year and the one previous. Inventory investment actually declined slightly, and investment in business plant and equipment rose only slightly. A 1.2 billion dollar drop in total business investment did occur in 1927, when the rate of growth in consumption fell by the large amount of 11 per cent. Again, however, the reaction does not seem to have been what one would expect on a priori terms from such a drastic decline in the rate of growth in consumption. One *might* point to the more than 700 million dollar decline in aggregate business investment (despite the large rise in the rate of growth of consumption) as a lagged reaction of induced investment.

Finally, in the crucial year of 1929, the rate of growth of consumption also took a drop, though the decline was not nearly so

great as some of those in earlier years. However, in this year national income *rose*, so that the fall in the rate of growth of consumption assumes added significance. Combined with the drop in autonomous investment which was setting in by that time, the effects of the decline in the rate of growth of consumption in 1929 undoubtedly contributed to the deflationary forces of the last year of the twenties by adding to the excess capacity that was already making its appearance in 1928.

Of course, it is virtually impossible to adjudge the workings of the acceleration effect statistically. This is so for two reasons. In the first place, there is no way of distinguishing *statistically* between that portion of investment which is induced by higher income levels and that portion which is the product of the dynamic forces of growth. Hence where investment does not appear to respond to declines in the rate of growth of consumption, there is no way of determining to what extent this has been due to offsetting effects from a continued swell in autonomous investment.

In addition, we are faced with the impossibility of determining in advance how much investment in inventories is planned and how much is of the unanticipated variety. A rise in inventories may be the result of an unforeseen decline in demand (or an insufficient rise in demand) as well as planned additional outlays for this purpose by businessmen. In either event, a rise in inventories is measured as an increase in investment. Of course, the outcome on future (induced) investment decisions will differ radically in the two cases of planned and unplanned accumulation of inventories.

Unplanned investment may thus account for the 2.7 billion dollar increase in the rate of inventory investment of 1925 over that of 1924, in spite of the 5 per cent decline in the rate of growth of consumption between the two years. Such may also account for the rise in inventories in the year 1929. In this year inventory investment rose from a minus figure of 0.3 billion dollars in 1928 to a positive value of 2.4 billion dollars in 1929, despite the three-point decrease in the rate of growth of consumption in latter years. On the other hand, planned investment may account, at least in part, for the rise in inventories in the face of declining rates of growth of consumption in these years. The reason might have been a fall below

normal in the ratio of stocks to sales in prior periods. Unfortunately, accurate data on this ratio for the twenties are not available, so that we are not in a position to pass judgment on which was the case, planned or unplanned inventory accumulation.

Because of the nature of the problems just discussed, we can do no more than speculate about the mechanics of the behavior of induced investment and consumption during the twenties. An equally plausible explanation of the rise in total business investment in 1929, in the face of a decline both in the rate of growth in consumption and a decline in the average propensity to consume, might be found in the inflated marginal efficiency of capital that prevailed in the latter part of the twenties, inflated by the fever of speculation that gripped the country in the last couple of years of the "new era." Some of the investment may also represent expenditures on projects begun before the downturn, the losses on which would be greater if discontinued than if brought to completion.

### *Other Factors in the Twenties*

*The role of foreign trade* was certainly of some significance in the continued upswing of the twenties. During the decade of the twenties, exports from the United States generally exceeded imports into this country. At the same time, U.S. capital was going abroad at the average rate of 1 billion dollars a year. The bulk of the American loans were being used by European countries to pay for imports of American products. Thus the credit balance of trade in the merchandise accounts of the U.S. was being financed by U.S. loans to the importing countries. It is evident that the high level of exports of the U.S., which, as we have seen, is as much an income generator as a net increase in domestic investment, could last only so long as U.S. investment credits would continue to pile up abroad. The props were pulled out from under the U.S. export trade in 1928. The reasons were a rise in interest rates that began in 1928 and, even more important, the beginnings of the stock market boom in 1928. With the appearance of the speculative boom in domestic equity securities, the attention of the American investor turned to the apparently more remunerative game of buying and selling stocks. With the collapse of foreign lending by U.S. investors, America's

## THE APPLICATION OF BUSINESS CYCLE THEORY

credit balance in current accounts rapidly dwindled, and, with the advent of the Smoot-Hawley Tariff Act in 1930 lending additional impetus, the credit balance had fallen to less than one quarter of its level in the twenties by 1933.

*The behavior of the stock market* is worthy of note. From 1923 stock prices rose virtually without interruption until the memorable October of 1929. In that period the index of stock prices rose a little less than 180 points, but by far the years of greatest rise were 1928 and 1929. In the last two years, stock prices rose a little over 100 points. Profits from stock speculation rose from an estimated 5.3 billion dollars in 1928 to 8 billion dollars in 1929.

The **steady** rise in stock prices had the effect of lowering somewhat the costs of borrowing by business investors and must have had some stimulating effect on the rate of investment during the twenties. Much more important was the tremendous rise in speculative earnings in the latter part of the twenties, which no doubt gave a sharp boost to the rate of consumer spending in this period, particularly spending on consumer durables. There is also little doubt that the stock market crash of late 1929 was instrumental in speeding up the rate of decline in output (which had already set in) in 1930, because of its tremendous psychological repercussions. Above all, the swirling movement in stock prices, together with the tremendous volume of new security issues which marked 1928 and 1929 (9.4 billion dollars of new issues were floated in 1929 alone), must be taken as symbolic of a tremendous wave of overoptimism in expectations. These overly optimistic expectations, in turn, had the effect of raising the marginal efficiency of capital to levels which were doomed to disappointment. Once the "error of optimism" was realized the marginal efficiency of capital plunged to the depths under pressure from a reigning "error of pessimism." As we have noted at length earlier, the excessive optimism of booms almost invariably gives way to excessive pessimism during deep depressions.

*The role of money* was, on the whole, a minor one during the twenties. The behavior of money is shown in Table 15. A glance at the movement of prices during the twenties shows them to have been remarkably stable for a period like the one we are examining. The growth in the money supply, together with the rise in income

velocity, would seem to indicate that  $MV_v$  (where  $V_v$  stands for income velocity) grew more or less in response to the rise in gross national product through the decade. The sagging tendency of prices in the second half of the decade indicates that these monetary factors rose less than proportionately to the rise in income. One thing that Table 15 conceals is the terrific rise in the financial circulation of money that occurred during the period of stock speculation in the late twenties. Balances must have been withdrawn from idle sources and from the income circuit to finance the wave of speculation in the stock market. This fact partly explains the rather large rise in income velocity that occurred between 1927 and 1929. In addition, the great rise in call loans in this period indicates that large portions of the increase in  $M$  that did take place were diverted into the financial circuit. As a result, there was a sagging tendency of commodity prices existing alongside the runaway price rise in the equity markets.

Federal Reserve policy, though vacillating at times, was mostly of the easy-money variety after 1923 and until 1928, when the monetary authorities became frightened by the stock market boom that began in the latter year. As a matter of fact, the remarkable stability displayed by commodity prices in the twenties may be said to be, in large measure, the product of conscious policy by the Federal Reserve authorities. However, the policy of price stability did not prevent the development of a concealed form of inflation in the form of corporate net incomes. The reason for the profit inflation, of course, was the tremendous advances that were being made in production techniques all during the twenties. This technological progress served to reduce production costs radically, and, with stable prices, an inflation of profits naturally developed. In the end corporate profits attained levels unprecedented in the peacetime history of the United States up until then. The profit inflation no doubt contributed to the high rate of investment during the twenties, by assuring excellent rates of return on investment in the twenties and, at the same time, providing corporations with (internal) sources of investment funds. However, it may well have contributed to the exaggerated optimism of the twenties and the inflated marginal efficiency of capital of which we spoke earlier.



## THE MINOR CYCLES OF THE TWENTIES

*The Inventory Cycle of 1921-1924*

From the trough reached in September, 1921, the major upswing of the twenties began in rather sweeping fashion. Certainly, the environmental circumstances set the economy up for a long period of cyclical expansion. The anticipated fall in prices in the recession of 1921-1922 was sharp and swift; likewise, the fall in wages, equally expected, was swift and sure in most industries. Thus was removed from the scene one of the main dampers on production and investment, the expectations that prices and wages would fall.

Moreover, the main bottlenecks of production were removed, namely, the shortages of labor and rail transportation. The removal of the rail transport bottleneck is seen in the 32-point rise in the index of freight carloadings between the period 1921-1923 and the peak of 1920. Employment fell rather sharply in the preceding downswing, particularly factory employment, whose index fell 24 points in the course of the recession. At the same time, there were important increases in productivity, a factor which, no doubt, also made the expansion of production much easier. The advances in productivity are made clear by the fact that the indexes of industrial production advanced rapidly up to and beyond their prerecession peaks, while employment never did recover to its immediate postwar peaks.

The money situation was also apparently eased somewhat during the postwar recession. However, the Federal Reserve System had very little to do with this. The best the System could succeed in doing was to lower rediscount rates about 1 per cent on the average around the country. The Reserve Banks did buy some government securities in the first part of 1922, but reversed this policy thereafter. On the whole, Reserve Bank policy had a slight deflationary bias.

To the extent that the credit situation was eased, this seems to have resulted primarily from gold inflows and a drain of cash out of circulation into the banks. Gold inflows were large in 1921 and though they fell appreciably in 1922 and 1923, they still added over

0.5 billion dollars to bank reserves in the latter two years. Their principal effect was to permit the banks to reduce considerably their indebtedness to the Reserve Banks. The return of cash from circulation also helped toward this end a bit.

More significantly, perhaps, the drain of cash from circulation signified a diminution in the need for transactions cash balances. This, after all, was not unexpected, considering the 16.7 billion dollar drop in gross national product and the great drop in prices. The reduced need for transactions cash is also evidenced by the decline in income velocity of money shown in Table 15. From our analysis of interest theory, we should expect the release of cash to idle balances to result in a fall in interest rates, just as the rise in velocity (decline in idle balances) had induced a rise in interest rates earlier. Interest rates on customer loans fell approximately 1.5 per cent, and those on prime commercial paper fell as much as 3.75 per cent. Following suit, the yields on long-term securities also fell somewhat. Lest any misapprehensions be made about the relative importance to be assigned to the role of interest rates, we caution the reader that most of the signs of and movements toward recovery had already revealed themselves by the time the interest rate structure had fallen enough to affect decisions significantly. If the decline in borrowing costs had any effect at all, it was probably that of giving added force to an upswing already under way. However, the general increase in liquidity alone may be expected to have given some impetus to investment spending.

As far as consumption is concerned, this variable seems to have played a rather passive role at best. We say this because there is every reason to believe that the propensity to consume had probably shifted upward in position in the immediate postwar period, consequent upon the great amounts of deferred consumer demand and liquid assets, both the product of the war. Since consumption declined during the postwar recession, we may attribute this mainly to the decline in national income. However, as is ordinarily the case when national income falls cyclically, the average propensity to consume rose in 1921, a factor which may account for a rapid rise in inventory investment in 1922 and 1923.

Without question, however, the real impetus to the major up-

swing that began in late 1921 was due to the tremendous expansion in the rate of autonomous investment. Leading the pack, as Table 14 indicates, was the construction industry, particularly residential construction, which rose 1.3 billion dollars between 1922 and 1923 after rising almost 0.75 billion dollars in the year previous. But it will be noticed that it did not take long for business construction and durable goods production to take up the tune. Most of the impetus for the latter came from the automobile and related industries, as is indicated by the fact that automobile and petroleum production rose some 46 and 22 per cent respectively between 1920 and 1923 as compared with a 14 per cent rise for the manufacturing industry as a whole in the same period. Lending impetus to the investment boom also was the great amount of accumulated depreciation of plant and equipment carried over from the war.

We should not leave out the high level export trade that prevailed in 1922, either. Even though the level of export trade in the current account had shrunk 0.7 billion dollars below its level of 1921, it was still a sizeable sum. The figure in 1922 stood at 3.8 billion dollars. While seemingly small, this sum takes on added importance when compared, for example, with the small figure for inventory investment. Most of the demand for American exports was for manufactures, agricultural exports having declined to negligible proportions.

*The Interruption of the Upswing by an Inventory Recession,  
May, 1923–July, 1924*

In May of 1923 the major upswing that began in late 1921 was interrupted by a slight recession that was concentrated primarily in inventory investment, as may be seen in Table 14. Of the approximate 3 billion dollars decline in gross capital formation that took place in 1924 below that of 1923, all but 0.3 billion dollars took the form of a precipitous drop in inventory accumulation.

One reason for this might well have been the sharp rise in inventory accumulation that occurred in the course of the upswing since 1921. It is unlikely that businessmen had forgotten the debacle of 1921–1922, when they had been caught with greatly excessive stocks. Recollection of this could easily have induced them to un-

dergo a period of inventory liquidation. We could be more certain of this hypothesis if we had some way of knowing to what extent the high rate of inventory investment in 1923 was voluntary and to what involuntary. On the one hand, we are confronted with the fact that the average propensity to consume fell in 1923 and, on the other, there is the fact that (not incompatibly) the rate of growth of consumption continued to rise after the recession had set in. The former would lead us to believe perhaps that consumption might have been insufficient in comparison with the rate of production. But the rising rate of growth of consumption partly refutes this. No conclusive answer to this question is possible with the available evidence.

A widely held explanation for the recession is the actions of the Federal Reserve System in February, 1923. At this time the Federal Reserve authorities, fearing an inflationary rise in prices, raised the rediscount rate from 4 per cent to 4.5 per cent. More than anything else this rise in the rediscount rate acted as a storm warning, giving notice that the Reserve System intended to take deflationary action. The Federal Reserve Board also issued statements warning of a possible runaway boom. Such actions were certainly not calculated to stimulate confidence and optimism on the part of businessmen, particularly when the experiences of the last deflation were still fresh in everyone's mind.

Nor did the monetary authorities see fit to stop at the above actions. A policy of open-market selling operations was embarked upon. By May of 1923 448 million dollars of government securities had been sold, and by August the System's holdings of governments had been reduced another 100 million dollars. As a result, bank borrowings from the Reserve banks rose sharply, and the banks, accordingly, raised interest rates from 0.5 per cent to 1 per cent on all types of loans. If we employ Mr. Hawtrey's analysis, we might say that the rise in short-term interest rates was of great significance to wholesalers and caused them to reduce stocks. However, while plausible, this explanation leaves the present writer unconvinced. More plausible are the remarks made above concerning the effects on expectations that the restrictive credit operations of the Federal Reserve authorities were designed to have.

Another possible explanation that has been suggested is that the durable goods industries, consumer and capital alike, may have been expanding a bit too rapidly for the rate of growth of aggregate demand, leading to a contraction of the type envisaged in the acceleration principle. Thus the Federal Reserve System's index of durable manufactures shows that the production of durable goods almost doubled between 1921 and 1923, the index rising from 53 in 1921 to 103 in 1923. In rather sharp contrast, the index of production of nondurable manufactures rose, in the same period, from 57 to 72, a rise of only 15 points as compared with the 50-point increase of durable manufactures. A breakdown of output of finished and unfinished commodities also reveals some of the same sort of evidence.<sup>16</sup> The output of nondurable consumer goods certainly exhibited none of the growth displayed by durable consumer goods production. The same was true of the output of many nondurable intermediate products as compared with durable intermediate goods and durable finished producer goods. Even more significant perhaps was the great slowdown in the rate of growth of all durables after 1923. As we have emphasized many times before, it is the rate of growth which turns out to be the all-important variable in an analysis of the possibility of overexpansion in certain areas of industry, or stages of production, relative to others. The slowdown in the rate of expansion in the production of so many durable goods would indicate that by 1923 the largest purchasers of producer and consumer durables were ready to cut down. The slowdown might thus account, at least in part, for some of the cutback in the production of producer durables.

The one difficulty with the above explanation of the slight downturn of 1923-1924 is that the differences in the growth of production between durable and nondurable manufactures existed during most of the twenties, although the disparities were never as great again as they were in the first two years of the major upswing of the twenties. While the great drop in the rate of growth of production of many durables may partly account for the minor recession of 1923-1924, it obviously was not widespread enough to cause a major

<sup>16</sup> See S. Kuznets, *Commodity Flow and Capital Formation*, Vol. 1 (New York, National Bureau of Economic Research, 1938), pp. 80-96 and 104-115.

collapse, and the continued sharp expansion in certain lines of investment, such as residential construction and radios and refrigerators in the consumer durables category, assured the continuance of the major upswing.

*The Resumption of the Major Upswing and the Minor Recession of 1927*

Swept on by the construction boom, the major upswing resumed its expansion as the minor recession ended in the summer (July) of 1924. The recession had been short and almost unnoticeable throughout most of the community. Gross national product had actually risen during the recession. The index of industrial production had fallen only 6 points during the recession, and the index of nonagricultural employment only 1.2 points. Illustrating the great stability of consumption, department store sales remained practically stable through most of the recession. Prices, too, remained stable during the recession.

The greatest impetus to the renewal of the upswing came, as had been the case from the start, from construction activity. Not only did total private construction activity rise, but close examination of the figures shows that the *rate* of growth in 1925 had risen above that of the previous year. The rise in construction activity was fairly evenly divided between residential and business construction. But note should also be taken of the rise in the rate of public construction activity, whose increment was 60 per cent the size of the increment in each of the categories of private construction.

The upswing was given further support by a rise of 0.4 billion dollars in the level of export trade balance over that of the previous year, which was as great as the rise in either of the components of private construction. Much of this was financed by a rise in foreign investment, the importance of which we have noted in an earlier section of this chapter.

As usual, too, certain industries continued to lead the way. Notable among these were the radio industry, which was beginning to come into its own in this period, and the rubber tire and petroleum industries, the latter rising in a continued response to the rising use of the automobile.

## THE APPLICATION OF BUSINESS CYCLE THEORY

Lending great assistance in the manner of a lubricant was the easy-money policy embarked upon by the Federal Reserve System, beginning in the very late fall of 1923. Between that time and the last months of 1924, the System purchased 0.5 billion dollars worth of government securities. At the same time there was an inflow of gold amounting to 0.6 billion dollars. As a result of these combined events, member banks were given the opportunity to reduce their debt to the Federal Reserve Banks and even build up their reserves somewhat. While the latter was not too important, the reduction in indebtedness was soon reflected in a fall in interest rates of 1 per cent to 2 per cent on various types of loans and a rise in loans and investments amounting to some 4 billion dollars in the two-year period between the end of the years 1924 and 1926.

Beginning in October, 1926, however, the major expansion was interrupted by another minor recession, one so mild that it does not even show in many time series. This recession is actually more important for showing up certain weaknesses in the economic structure than for anything else. The most important event witnessed in this period was the slackening in the rate of residential construction activity. The crest in this channel of investment was reached in 1925 and thereafter began a decline which gradually gained momentum, as may be seen in Table 14. That residential construction had "gone over the top" was clearly emphasized by the decline in the index of rents, which began in 1925 and, even more significantly, by the growing number of housing vacancies that began to appear in 1925 and later years.

Although the decline in residential construction was rather severe in 1926, it was offset to a considerable extent by the continued rise in business construction. Nevertheless, the aggregate of private construction activity fell slightly in 1926. But because this decline in the latter was very small, perhaps more emphasis should be placed on the fall in the rate of growth of private construction activity, for it is evident that it was important enough to leave many of the industries which supplied the construction industry in a somewhat overexpanded state. Examination of the volume of production in many of the building supply industries shows the effects of the slackening growth rate in 1926 and 1927. Although the aggregate

decline was small, it boded ill for the future. It meant that the economy was gradually losing one of the fundamental forces which had been maintaining the major upswing in the face of occasional deflationary influences.

Another factor which is usually cited in connection with the slight break in the upswing in 1927 is the shutdown in the Ford motor works, to permit the retooling processes necessary for the switch from the Model T to the Model A. Mostly as a result of this shutdown, the volume of motor vehicle production fell by almost a million cars. It is clear that the fall in the volume of car production cannot be laid entirely at the feet of the Ford Company, however. For the rate of increase in car production by the middle of this decade was considerably less than it had been in the first years of this period. While the volume of car production was yet to make a final great spurt in 1929, it is evident that this industry was gradually reaching maturity. And it is this latter fact that is of the utmost significance, since, we have seen, this industry perhaps more than any other (except residential construction) literally underwrote the prosperity of the twenties.

It is evident from a number of sources that the recession was minor and, even more important, was *thought* to be minor, that is, the marginal efficiency of capital remained high. One of these was the firmness shown by business construction, which continued to rise. The 255 million dollar decline in producer durables may be attributed to a decline in induced investment. The fact that the production of capital equipment was maintained at such a high rate, along with the actual rise in business construction, points to the undiminished force of autonomous business investment at this stage of the major upswing.

Another, most important, indication that the recession was minor is seen in the fact that the great bulk of the 829 million dollar net decline in gross investment was concentrated in the fall in the rate of inventory investment, as was the case in the minor recession of 1923-1924. Because the decline in inventory investment was such an important part of the decline in gross investment, an explanation of its origins could provide an important clue as to the sources of the entire recession.



It is difficult to put one's finger on the exact origin of the decline in this form of investment. Part of the answer may lie in the high rate of accumulation that went on in the two years prior to 1927; the memories of the 1921 fiasco may still have been strong enough to create a reluctance in the minds of businessmen to hold large stocks. Assigning this reason as the decisive factor in the fall of inventory investment, however, smacks a bit too much of working a good thing into the ground.

Another possible explanation of the behavior of inventory investment may be an underconsumptionist explanation. Table 16 shows a terrific decline in the rate of growth of consumption to have occurred in 1927, one of 11 per cent. The 8 per cent decline in the rate of growth of national income may seem to explain the fall in the rate of growth in consumption. But the stability of the average propensity to consume in the face of the absolute decline in gross national product would seem to indicate that the consumption function also fell somewhat. We cannot be certain of this, however, because of the crudity of our treatment of the raw data.

It might seem that the comparative smallness of the decline in gross national product would argue against an underconsumptionist hypothesis of the type just discussed, because the multiplier effects of a decline of investment in residential construction and the decline of the consumption function would be expected to produce a larger decline in national income than actually occurred. This need not necessarily be so, however. The effects on capital formation of autonomous factors, together with the multiplier effects of the latter, could well have offset the declines in residential investment and the consumption function. And there is strong reason to believe that this was the case. In the private sector, the importance of autonomous influences on investment is seen in the continued rise in business construction and the tiny reduction in the flow of producer durables, both in the face of a *declining* national income. Furthermore, there was a rise in investment in public construction in 1927, which amounted to 316 million dollars, a figure which offset almost 65 per cent of the fall in investment in residential construction and producer durables.

We thus have two broad possible explanations of the minor re-

cession of 1926-1927, explanations which may be considered as supplementary or alternative to each other. One is that the recession originated in the slackening in that sphere of autonomous investment we call residential construction (perhaps abetted by the Ford shutdown). The other is an underconsumptionist explanation, taking the form either of an acceleration effect, because of the sharp decline in the rate of growth of consumption, and/or a downward shift in the consumption function. Because the decline in gross investment was concentrated in a fall in the rate of inventory investment, which may be taken as primarily an *induced* form of investment, we are inclined to emphasize the underconsumptionist approach. Although the importance of the decline in residential construction was of extreme importance, its significance, in the opinion of the present writer, is primarily that of indicating the development of a new trend in a very important segment of autonomous investment, one whose ultimate consequences could be dire, indeed. Of course, this turned out to be precisely the case in 1929, by which time the contraction in residential construction had assumed very large proportions.

*The End of the Recession, December, 1927 and the Renewal of the Major Upswing until June, 1929*

No stronger indication exists that the marginal efficiency of capital had remained high right through the minor recession than the movements in the stock market. With the exception of the first few months, stock prices actually rose during most of the recession. Nor is it wise to attribute the rise solely to speculative activities. For one thing, the rise in stock prices really did not assume speculative proportions until 1929. Most of the rise in stock prices after 1925 may be attributed to the rise in both corporate profits and dividends. Corporate net incomes in manufacturing industries increased at an annual rate of 5.3 per cent in the period 1922-1929. In the face of a strong and rising average rate of consumer spending (during this period as a whole), either slightly advancing or stable prices, and a tremendous advance in production techniques which resulted in all sorts of cost reductions, corporate profits rose gradually to levels unsurpassed in peacetime history. Dividends

rose to higher and higher levels. Stock prices undoubtedly reflected the facts. With the wave of optimism which was sweeping the country, it was not unnatural that the community should look for still greater profits and dividends and that stock prices should mirror its expectations. The figures indicate that, until 1929, these expectations were quite correct.

As evidence that the optimism was shared by that very important segment of the population, the businessman, we may look at the investment activities of corporations. After 1926 the volume of stock issues bounded forward, rising over 0.5 billion dollars in 1927 and increasing another 2.4 billion dollars in 1928. Furthermore, although the absolute volume of dividends increased in these years, reflecting the rise in corporation earnings, *the percentage* of profits distributed as dividends declined (almost 10 per cent between 1923 and 1929).<sup>17</sup> Business enterprise apparently was hungry for investment funds. The increasing reinvestment of earnings and resort to the capital market for additional investment funds is certainly indicative of a very high marginal efficiency of capital, both in the early and latter portions of the twenties.

The Federal Reserve System did its bit to facilitate the resumption of the major upswing of the twenties. Starting in March, 1927, the System embarked upon a counter-cyclical open-market purchases program. By the end of the year the Federal Reserve Banks had added some 300 million dollars of government securities to their portfolios.<sup>18</sup> Member banks' reserves grew somewhat, despite a small outflow of gold, and interest rates fell a trifle. Bank loans and investments expanded, and the vast bulk of the new loans went into the financial circuit. There is little doubt that an open-market policy designed to ease the pressure on the income circuit, succeeded in giving a great stimulus to the securities markets. How-

<sup>17</sup> This decline in the percentage of profits distributed in the form of dividends is indicative of another very significant development during the twenties, namely, an increasing tendency to rely on reinvested earnings for investment funds. The importance of this development will be brought out presently.

<sup>18</sup> The open-market purchases were also designed to facilitate short-term capital movements abroad from the United States. The recession had caused a decline in our imports, creating a shortage of American foreign exchange in European countries.

ever, the easy-money situation assured an elastic money supply for the income circuit as well, and certainly this is the appropriate policy for the monetary authorities to pursue in times of recession, even if the recession is minor.

Other factors contributed their bit to the renewal of the upswing. Among these was a sharp rise in the level of merchandise foreign export trade, which rose over 300 million dollars in the two-year period between the end of 1926 and the end of 1928. A slight rise in aggregate (public and private) building activity in 1927, mainly as a result of a rise in public construction, undoubtedly gave some stimulus where, in view of the high marginal efficiency of capital, very little was needed. And, of course, there were the consumer durables, primarily radios, refrigerators and automobiles. Following the retooling of the Ford Company, automobile production rose again, rising gradually in 1928 and then bursting forth with a volume of production in 1929 which surpassed anything prior to that year, and which was not to be approached again for over a decade. In addition, the radio industry reached the zenith of its development in the two-year period 1928 and 1929.

Aside from the stock market, the resumption of the upswing was certainly not marked by any excesses. Industrial production rose 15 per cent. All forms of private investment but residential construction showed strength, particularly investment in producer durables and inventories. Factory employment rose 6.4 per cent while factory payrolls rose 8.6 per cent. These figures indicate that while wages rose somewhat, the rises were small and were nothing to become concerned about, for the technological advances being made were practically certain to offset them to a considerable extent by raising productivity.

Commodity prices not only did not rise in this period but actually fell slightly. This might seem odd in view of the rise in the money supply and income velocity. However, the rise in money supply was not excessive, being considerably less than the increase in the money supply during any other period of renewed upswing in the twenties.<sup>19</sup> Moreover, a good part of the expanded money

<sup>19</sup> The rise in the money supply was undoubtedly part of the secular growth demanded by the expanding economy. It is interesting to note that

supply found its way into the financial circuit during 1928. The rise in income velocity was undoubtedly due to a drain of idle transactions and cash balances into the financial circuit and to the rise in the volume of income transactions accompanying the tremendous rise in gross national product that took place in 1928 and 1929.

The decline in hoarded balances did exert some upward pressure on the structure of interest rates. Short-term rates on all categories of loans rose 1.5 per cent to 2 per cent between January, 1928 and June, 1929, the date when the major upswing broke. However, the rise in short rates was hardly reflected in the rise in long-term interest rates. Top-grade (private) yields rose from an average of 4.57 per cent in 1927 to 4.58 in 1928, while second-grade bonds found their yields rising from an average of 5.48 per cent to 5.50 per cent in the same period. During the critical months of 1929 the former managed to rise only to 4.8 per cent and the latter to a little over 6 per cent. In the light of the extremely high marginal efficiency of capital that prevailed during this last phase of the major expansion, it should be clear that these very small increases in long-term interest rates can have exerted very little, if any, effect on investment decisions. The same is true of the rise in short-term rates, whose influence was still further reduced by the change in corporate financing methods, whereby business enterprise looked increasingly to reinvested earnings for working capital.

The reader should note carefully the general characteristics of the time series discussed in the preceding paragraphs. The behavior of wages, prices, and interest rates will become important in evaluating the essential nature of the collapse in 1929, that is, whether it was in the nature of an overinvestment or underconsumption crisis.

### *The End of the Major Upswing*

June, 1929, marks the peak, generally speaking, of the major upswing of the twenties. While not all time series turned downward

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secular growth in the money supply comes in spurts which reflect each renewal of the major upswing. The minor recessions apparently do not cancel out the increases of previous years; it takes a contraction of the magnitude of that of 1920-1921 and, even more so, of 1929-1933, to bring about a sharp reduction in the total supply of money.

in this month (some turned down a few months earlier, others a few months later), the most important of them did, *viz.*, the Federal Reserve Board's index of industrial production. Employment lagged a bit and did not begin to decline till October. Moreover, it is evident in most series that the collapse gained momentum as it proceeded, the rates of decline in 1931 being, for most series, greater than they were in 1930. The one index which fell fairly evenly was the aggregate production index, apparently because it fell so sharply in the first place. Within six months it had fallen 22 points below its peak; in 1930 it fell another 18 per cent and by the summer of 1932 dropped another 26 per cent. From its peak of 125 in 1929 the index of total industrial production fell to a low of 58 in 1932, a decline of 67 per cent. Factory employment fell over 38 per cent between 1929 and 1932. Department store sales dropped 41 per cent in the same period; the cost of living fell 31 per cent.

The magnitude of the monetary contraction is seen in Table 15. The money supply fell 6.5 billion dollars. Where total deposits expanded some 17 billion dollars between 1922 and 1929, they contracted some 16 billion dollars in the *four* year period 1929-1933. The awful rush into liquidity is partly indicated by the 35 per cent drop in the income velocity of money that occurred between 1929 and 1932. These figures do not show the other markings of the mad rush into liquidity revealed by the wild collapse of security prices, as people and institutions strove to get out of long-term private securities into cash and the less risky government securities, particularly in 1932 and the first months of 1933.

The principals in the collapse of the "new era" may be seen in Table 14. As with all other major cyclical contractions, gross investment led the way, while consumption acted as a stabilizing force. Whereas gross investment fell some 80 per cent, the fall in consumption was held to 42 per cent. This accords with our knowledge that capital goods industries fluctuate much more widely than consumer goods industries, for reasons we have discussed at various points in this volume. Illustrating the same point, the production index of durable manufactures fell 91 points between 1929 and 1932, compared to a 20-point drop in the production index of nondurables. This tremendous drop in the index of durable manufactures, which

includes consumer durables, gives some indication of the contribution to a nation's economic instability that consumer durables make. The comparative stability of consumption, of course, represents a rise in the average propensity to consume (along a short run consumption function) from 78 per cent in 1929 to 93 per cent in 1932, the rise, in turn, being the product of the community's efforts to resist a fall in living standards by digging into past savings and borrowing.

There is little point in trying to distinguish induced from autonomous investment during the period of contraction, for both types of investment went into a headlong decline, and as the contraction proceeded, it is apparent that each managed to drag down the other. Yet close examination of Table 14 indicates that the percentage decline in producer durables output between 1929 and 1933 was 71 per cent, while that of private construction was 85 per cent. Table 16 in the next chapter also reveals that it was residential and building construction which rose least during the anemic upswing of 1933-1937. On this account, we may conclude that the fall and later lack of private construction activity lies at the heart of the cyclical events of the decade embracing 1929 and the following nine years, just as the high rate of construction was fundamental to the upswing of the twenties.

### *The Crisis: Underconsumption or Overinvestment?*

In the previous chapter the author's opinion as to the nature of the breakdown in 1929 was indicated. In the present section, we shall offer evidence in support of that opinion on the one hand, and, on the other, offer evidence in opposition to the belief of some writers that the crisis was due to overinvestment or undersaving (capital shortage).

The theory of the crisis of 1929 which we have espoused might be called an underconsumption-underinvestment explanation. There is strong evidence that there was a decline in the consumption function (or else a sharp fall in the marginal propensity to consume) in 1929. At the same time, there was a sharp contraction in autonomous investment. Thus, where in previous (minor) recessions of the twenties, apparent declines in the rate of consumption

were strongly offset by the continued surge in autonomous investment in construction and in consumer durables, including the automobile, this driving force of the twenties' prosperity failed to perform the same role in 1929. The result was a combined fall in the marginal and/or average propensity to consume and the investment schedule. After 1929, we had the vicious circle of contraction, the decline in consumption leading to a decline in induced investment, the latter, in turn, leading to further reduced incomes and consumption, and so on. It is not difficult, either, to believe that the crushing blow received by the marginal efficiency of capital during this disastrous downswing undoubtedly led to the postponement of at least some investment that we would normally refer to as autonomous.

The case for an underconsumption-underinvestment theory of the 1929 crisis seems to the present writer almost incontrovertible. Even though gross national product maintained a constant rate of growth in 1929, the rate of growth of consumption fell, according to our figures, 3 per cent. This in itself would indicate that either the consumption function had fallen or else there was a sharp drop in the marginal and average propensities to consume along a given consumption function (it is statistically impossible to tell which was the case). In addition, we have corroborative evidence offered in the form of a 2 per cent decline in the average propensity to consume below that which our figures give for 1928. (Since a decline in the average propensity to consume may be the product either of a downward shift in the position of the consumption function, or alternatively, a movement to the right along a stable function which intersects the *vertical* axis of a propensity-to-consume diagram above zero, again it is impossible to determine whether or not the consumption function had actually declined in *position*.) Nonetheless all the evidence points to a declining rate of growth of consumption (in the face of a *rising* income) and a fall in the average propensity to consume, both indications of a failure of consumption to keep up with the rising income in the critical year of 1929.<sup>20</sup>

<sup>20</sup> Mr. T. Wilson, who reaches much the same conclusions regarding the origins of the collapse in 1929, points out that the decline in the rate of growth in consumption in 1929 could have been the result of the appearance of bottle-



It is true that something similar had happened in the minor recessions of 1924 and 1927. In both these years the rate of growth of consumption declined, and even more sharply than seems to have been the case in 1929. However, in the first of these minor recession years, the gross national product had risen but a tiny fraction above its level of the previous year, and this sharp decline in the rate of growth of income could account for the fall in the rate of growth of consumption. In similar fashion, the fall in the absolute level of income in 1927 explains much of the fall in the rate of growth of consumption in that year. In both these years, moreover, the average propensity to consume was higher than it had been in the immediately preceding years. Only in 1929 do we get the combination of a fall in the rate of growth of consumption in the face of a *rising* income and a decline in the average propensity to consume. Thus we can say, at least, that in 1929 the behavior of consumption seems to have been largely independent of the movements of national income. This would tentatively indicate either a decline in the position of the consumption function, or a fall in the marginal propensity to consume and/or a fall in the average propensity to consume along a stable consumption function.

On the foregoing grounds it might perhaps be sufficient to ascribe the downturn to underconsumption alone. However, our data are crude, and on these grounds there is room for doubt. Moreover, we have examined only a limited number of variables, a factor which might raise further elements of doubt. Suppose, therefore, for the sake of argument, we assume that the deflationary

necks in the consumer goods industries, which prevented them from expanding at a fast enough rate. However, as Wilson notes, all the evidence points to a plentiful labor supply, and other resources. In the first place, the Federal Reserve Board's industrial production index rose 11 points between 1928 and 1929, a rise 3 points greater than occurred after the recession of 1924. Moreover, the index of durable manufactures (which would include consumer durables) rose by 15 points in 1929, compared to a 10-point increase in 1928; the index of nondurables (which would include consumer goods as well as capital goods in the lower stages of production) also rose by 6 points more in 1929 than it had in 1928. Furthermore, there is the fact that the consumer price index actually fell, and wage rates rose only a very small amount. All this evidence adds up pointedly to a very elastic supply of factors and production. See Wilson, *Fluctuations in Income and Employment* (New York, Pitman Publishing Corporation, 1948), pp. 155-156.

pressure imposed on the economy by the decline in the rate of growth of consumption was no greater in 1929 than it had been, say, in 1927, when the fall in the rate of growth of consumption was much greater. Why didn't the downswing of 1929 remain within the limits of a minor recession as had its predecessor of 1927?

The answer to the question just asked should by now be clear. Whatever deflationary pressure on induced investment was created by the fall in the rate of growth of consumption in 1927 was more than offset by the stimulus still provided by the high rate of investment from autonomous sources, including residential construction, certain public utilities (and, we should not forget, a high rate of public construction), and outlets provided by technological advances in the form of new products and methods of production. In 1929, however, there was a major collapse in residential construction, as is evident from the figures in Table 14. The *rate* of decline in this major investment outlet had slowed down somewhat after its sudden downturn in 1925; but in 1929 the rate of decline abruptly increased again, and residential construction fell almost 1.25 billion dollars, in contrast to a decline of less than 300 million dollars the year before.

In addition to residential construction, we have cited the automobile industry as the one whose expansion, along with that of its related industries like petroleum and rubber tires, perhaps more than any other (aside from residential construction) provided the chief sources of autonomous investment outlets. Yet, as Professor Schumpeter has noted,<sup>21</sup> there was increasing evidence in the late twenties that investment in this industry was more and more falling into the category of *induced* investment and less and less into that of autonomous investment.

The outstanding example of this was the aforementioned shut-down of the Ford Company to produce the low-priced Model A. Here was a car which was designed to appeal to income strata for the bulk of whom the automobile had been out of reach. It was an indication that the automobile market was slowly approaching the saturation point. There were also many changes in organization and financing methods in the automobile industry, which were, in

<sup>21</sup> *Business Cycles*, Vol. II, p. 774.

part, the result of increasing competition in a market that was rapidly being filled up. Not only were there low-priced models coming out, but the prices of the older ones felt the pressure of the same increasing competition. The number of producers in the industry also declined sharply.

All these factors are marks of an industry which, temporarily at least, has passed the zenith of its expansion. They are the characteristics of an industry which, increasingly, was becoming *dependent* for its prosperity on high levels of national income and employment, instead of being to a large extent *responsible* for these high levels. In the terminology we have used in this book, investment in the automobile industry had by the end of the twenties become primarily *induced* in character, so that in the event the national income should fall, it would no longer function as it had in the past, as a great buoying force acting to contain minor recessions, but instead would fall, too.

On two counts, then, we may make the assertion that two of the chief components of autonomous investment had disappeared by the time 1929 rolled around. One of these was investment in residential construction; the other consisted of the outlets for investment in the automobile industry. Along with certain other components of autonomous investment, mentioned earlier, these had been instrumental in offsetting the depressive effects on the economy of declines in the rate of growth of consumption and perhaps cyclical declines in the marginal and/or average propensities to consume. As a result, the previous recessions of the twenties had been held within the limits of inventory recessions. But by 1929 these two chief contributors to the major upswing of the twenties had worn out and become incapable of compensating for the drags on the economy imposed by a falling rate (and rate of growth) of consumption. For this reason, the recession of 1929 developed into a major downswing, whose depth of contraction and rate of contraction have few, if any, counterparts in business cycle history.

*An overinvestment or undersaving explanation of the downswing* does not appear capable of being sustained in the light of the available evidence. Before we proceed to explore the economic data bearing on the subject, let us first recall of what an overinvest-

ment theory consists. The crisis, according to the overinvestment school, originates in a shortage of capital, of monetary command over the factors of production in the capital goods industries. One of the reasons for this is the refusal of the banking system to go on expanding credit when the banks reach the limits imposed by legal or customary reserve requirements. The second source of capital funds, namely, the savings of consumers, also provides nothing; rather just the opposite is the case, consumers acting to deplete the supply of savings as much as possible. The reason is that during the course of expansion the inflationary rise in prices, resulting from an expansion of bank credit in a period of full employment, forces consumers to reduce their living standards involuntarily; that is, the price inflation induces "forced savings." However, when consumer incomes finally begin to catch up to prices, people attempt to regain their former standards of living. In doing so, they bid up consumer goods prices, which lead to higher factor prices in the consumer goods industries. At the same time they deprive the capital goods industries of capital funds, causing these industries to lose factors to the consumer goods industries. The losses in the capital goods industries, however, cause them to close down faster than the consumer goods industries can expand, and a cyclical breakdown in the income stream ensues.

Thus the hallmarks of an overinvestment crisis are (1) a period of sharply rising consumer goods prices during the better part of the upswing; (2) sharply rising wages and interest rates about the time of the crisis; and (3) a shortage of capital funds to business enterprise, either in the form of a virtual cessation of bank loans or a sharp drop in the supply of savings out of profits or borrowed funds.

Of these three characteristics of an overinvestment crisis, the only one which was even remotely approached was somewhat of a stringency of bank credit. However, other forms of capital funds seem to have been so readily available that there is serious doubt concerning the significance of the slight shortage of bank credit that did exist.

Let us examine each of the requirements of an overinvestment crisis in the order given above. If a sharp rise in the prices of con-

sumer goods is necessary to induce "forced savings," there is certainly no evidence that such a price rise took place at any time after the major upswing got under way at the end of 1921; a glance at the cost-of-living index in Table 15 bears this out. In fact, far from rising, the index actually began to drift downward after 1926. Admittedly, the fact that prices were stable in the face of declining production costs means that consumers did not share in the advancing technology to the extent they might have, and it is also true that this situation made for higher levels of corporate earnings than had ever been attained in peacetime history. But this is of no consequence for an overinvestment theory, since in no way can such a situation be regarded as leading to a reduction in living standards, to a situation that is involving "forced savings." On the contrary, we have seen that per capita real income rose steadily throughout the twenties.

Although hourly wage rates in manufacturing industries rose somewhat during 1928 and 1929, their rise was far too small to give any indication of a competing-away process of productive agents from capital goods industries to consumer goods industries. The hourly wage index in manufacturing industry rose from 107 in 1928 to 109.1 in 1929. Wages in certain capital goods industries rose a little more than the average, but with profit expectations as high as they were in these two years, these could have had little damping effect. The buoyancy of profit expectations is revealed, as we noted earlier, by the great amount of equity borrowing and reinvestment of earnings carried on by corporate groups in this period.

Was there a capital shortage of the magnitude envisioned by the overinvestment school? Let us first concern ourselves with the supply of savings. Savings, of course, are made available to borrowers in two different, and supplementary, forms, *viz.*, through the purchase of newly issued bonds or equity securities by the public and through the reinvestment of profits. Although there was evidently some decline in the volume of new corporate bond issues (exclusive of refunding issues), this decline corresponded so closely with the prodigious rise in the volume of stock issues as to indicate (what is well known) a shift in the methods of financing on the part

of corporations. The rise in stock prices which took place in 1928 and 1929 simply made borrowing via equity securities too cheap to resist. Furthermore, there is the well-known tendency of manufacturing firms, whose incomes follow the business cycle so closely, to resort to equity borrowing wherever possible, in order to avoid the crushing burden of fixed interest charges during periods of cyclical slump. That the decline in corporate bond issues did not reflect a long-term capital shortage, is indicated, first, by the extremely small rises in yields on high quality bonds and the only slightly larger rises in yields on lower grade bonds, which we have discussed a few pages earlier. The second indication that there was no shortage of long-term capital is seen in the immense quantity of new issues of stocks that were sold in 1929. Whereas 3 billion dollars of equity securities were sold in 1928, 5.9 billion dollars of such securities were sold in 1929. And as might be expected, all but 0.7 billion dollars of these were sold in the first three quarters of the latter year.

Admittedly, large amounts of these new issues were used to facilitate certain financial coups, such as those carried out by the holding companies. It is true, also, that a great part of this money came from amateur speculators anxious to cash in on the wild spree that was taking place on the stock markets. But it seems to the present writer that the purposes and reasons which underlay the vast purchases of new securities by the public are less important (for our present purposes) than is the fact that these purchases signify that vast amounts of capital were placed at the disposal of business enterprise. They are a key clue to the answer to the question whether 1928 and 1929, especially the latter, were years of capital shortage, of undersaving.

There are yet other strong indications that these critical years were not marked by shortages of long-term investment funds. One of these is the extremely high level of profits earned by corporations in 1928 and 1929. These profits are important because they provided a major source of new funds for investment, that of reinvested earnings. The figure for reinvested corporate earnings in 1928 was approximately 2.5 billion dollars, and in 1929 the figure

was 2.3 billion dollars.<sup>22</sup> Although there was a slight fall in plowed-back profits in 1929 below the level of 1928, this was apparently due to a higher rate of growth of dividend payments than of profits. Still, the level of reinvested earnings in 1929 was higher than it had been since 1925 (aside from 1928).

As the final reason for doubting the presence of a capital shortage in the critical period before the crash we have the evidence offered by the behavior of consumption. The fact that the rate of growth of consumption declined in 1929, even while the national income was rising, is sufficient indication itself that consumers were making no efforts to expand their living standards in an extraordinary fashion. If anything, the evidence indicates that in 1929 their ability to adjust to higher incomes had not kept up with the rate of increase in their homes. The figures for the ratio of consumption to income show that in this crucial year the rate of savings had actually risen above that of the year before.

All these bits of evidence leave little doubt as regards the answer to the question of whether there was a shortage of long-term capital in the critical period of late 1928 and at least the first six or eight months of 1929. The answer seems to be quite definitely in the negative. On the contrary, the evidence appears to point to an abundance of long-term capital funds during this period.

What about short-term capital in the form of bank credit? Here there are signs that a certain amount of stringency existed. The principal reason for this is the restrictive credit policy that the Federal Reserve System had embarked upon, beginning in the first month of 1928. By the middle of that year the System's holdings of government securities had been reduced some 400 million dollars and its holdings of acceptances another 100 million.

In the fall of 1928 these open-market sales ceased and about 300 million dollars of governments and acceptances were purchased by the Reserve Banks. At the same time, the Federal Reserve System

<sup>22</sup> The figures for reinvested earnings are taken from W. L. Crum, "Corporate Earnings on Invested Capital," *Readings in the Theory of Income Distribution* (Philadelphia, The Blakiston Company, 1946), p. 583. First published in the *Harvard Business Review*, XVI (Spring, 1938). Other figures on security issues are taken from *Annual Reports of the Federal Reserve Board*, as are most data employed in this chapter, outside of those in the tables.

entered into a policy of qualitative controls, attempting through moral suasion to induce the banks to call in broker loans and refuse to grant new loans of this type. The monetary authorities, by these actions, revealed a fear of harmful effects on the economy if a tight credit situation were brought to bear on the income circuit. But they were naturally quite concerned over the headlong speculative spree into which the stock market was heading. Their objective was to prevent a flow of funds into the financial circuit, which would add fuel to the fire. In pursuing the policy of differentiating the use to which loans were put, the Federal Reserve Banks even maintained a preferential discount rate on bankers' acceptances right up until the winter of 1929. They winked an eye at the practice of many banks in writing acceptances and selling them to the Reserve Banks at the preferential rate, even when, in effect, these actions nullified the restrictive actions of the Reserve authorities.

What perhaps should have been anticipated, happened. Except for a short period at the beginning of 1928, bank credit continued to flow into the financial circuit. As stock prices continued to gain momentum, the Reserve authorities took alarm again and renewed the policy of credit restriction in a direct manner through open-market sales. Starting in January, 1929, almost 350 million dollars of governments and acceptances were sold by the end of May. The pressure on bank reserves brought by the various restrictive credit operations of the Reserve System served, as noted earlier, to push up short-term interest rates on all types of loans 1.5 per cent to 2 per cent between January, 1928 and June, 1929.

How much importance can we attach to the rise in interest rates? In the present writer's opinion, not much. As a cost of production, they are too small a fraction of costs to mean much, *especially when the marginal efficiency of capital is very high*, as it undoubtedly was during 1928 and the first five months or so of 1929. The extreme optimism of everyone also reduced the importance of a rise in interest rates as a psychological factor, a warning on the part of the monetary authorities of possible impending disaster. The "new era" optimism pervaded the thinking of everyone. It is impossible to describe the abiding faith of the average man-on-the-street, including the vast majority of businessmen, in the ability of the



economy to go on indefinitely in a state of exalted prosperity. Even after the downturn had proceeded for some months, the majority were convinced that it was merely a minor recession and that the economy would quickly resume its path of prosperous times. If these statements concerning the psychological impact of higher rediscount rates seem to contradict the description of their effect in 1920, let the reader be reminded of the vast difference in the state of prevailing expectations between the two periods. In the earlier one, the community fully expected a recession to take place, and the rise in rediscount rates meant that the Federal Reserve System was going to do its best to bring it about. In 1928 and 1929, however, the community was just as convinced that a *major* depression, at least, *couldn't* come about. Therefore, the higher interest rates, psychologically speaking, meant nothing.

But what of the absolute quantity of short-term bank credit? Even if higher interest rates, particularly short-term rates, would have little effect on the demand for bank funds, a shortage of supply could certainly prevent a further expansion of credit and create a shortage of capital as envisaged by the overinvestment school. Total bank loans did decline some 210 million dollars between the end of 1928 and the end of March, 1929. But it is interesting to note that this decline is explained solely by a contraction of brokers' loans of over 600 million dollars, for "other loans" rose more than 450 million dollars; part of the latter was offset by an 81 million dollar decline in investments. Between the end of March and the start of the downturn in the month of June, total member bank loans rose 0.7 billion dollars; only 164 million dollars of total loans were brokers' loans. These figures compare quite favorably with the volume of total member bank loans made in any previous year of the twenties for the same period of time, except 1928. At the very least, this would indicate that the banks displayed no undue reluctance to lend in the critical period prior to the upper turning point in June of 1929. It is interesting to note, also, that total loans rose another 0.5 billion dollars in the three months following June.

We should also recall the change in financing methods which corporations were gradually adopting. The increasing resort to

reinvested earnings for investment funds was in part a way of gaining a long-sought-for measure of independence from the banks, large amounts of plowed-back profits being used as working capital. The extent to which business enterprise succeeded in supplying itself with its own working capital is indicated, in part, by the increasing tendency of bankers to depart from the old banking-school doctrine of keeping assets as much as possible in the form of commercial paper. The appearance of stocks, mortgages, etc., in bank portfolios marked a radical departure from commercial banking tradition. It is significant for us because it reveals that business enterprise had succeeded to an important degree in reducing its dependence on bank credit for working capital. We may recall, too, that internal sources of such capital were plentiful in the period under consideration, because of the extraordinary level of profits in 1929 and the preceding year. Thus even if credit conditions were a bit tight, as they were (although not nearly as much as many exponents of the overinvestment theory would have us believe), all things considered, they were not sufficiently tight to have precipitated a downturn of the magnitude of that which occurred in the summer of 1929. On the basis of all the foregoing arguments, including those relating to consumer prices, wages, interest rates, sources of saving, and the volume of bank credit, the present writer concludes that an overinvestment explanation of the crisis of 1929 is neither adequate nor sustainable.<sup>21</sup>

#### SELECTED REFERENCES

See selected references at the end of Chapter 13.

<sup>21</sup> The econometric investigations of U.S. business cycles by Professor Jan Tinbergen, for the League of Nations, have led him to the same conclusions, on much the same grounds, regarding the plausibility of an overinvestment explanation of the 1929 breakdown. See Tinbergen, *Statistical Testing of Business Cycle Theories, II. Business Cycles in the United States of America* (Geneva, League of Nations, 1939), 1919-1932.

## CHAPTER 13

### **BUSINESS CYCLES IN THE UNITED STATES, 1919-1949:**

#### ***Continued: THE THIRTIES AND FORTIES***

#### **THE THIRTIES**

##### ***The Period Up to March, 1933***

In the closing pages of the last chapter we noted the severity of the contraction in national income from the middle of 1929 to March, 1933. Additional insight into the rigor and harshness of the decline may be gleaned from Table 14 in the preceding chapter. The series that stand out conspicuously are those in columns (2), (3), and (4). There is, first, the tremendous decline (and the magnitude of the *rate* of decline) in the rate of gross investment. But pointing up the severity of the contraction, above all, is that series which measures the rate of *net* business (domestic) capital formation. Beginning in 1931, the figures show an astounding amount of *disinvestment* in business plant and equipment and inventories. It is these investment figures which explain the severity of the decline. So great were they that we are actually able to mark the turn toward revival in March, 1933, with the decline in the *rate* of *disinvestment* (in inventories). The ability of the economy to live off its past capital attests to the extent of the saturation in the many channels of investment in the late twenties and the resulting excess capacity. The extreme rate of disinvestment attests, also, to the depths to which the marginal efficiency of capital fell once the downswing really picked up steam in the fall of 1931.

The extreme nature of the contraction is further manifested in

the high monthly rate of decline in gross national product. Experience with cycles in the past gives evidence that the longer a phase of the cycle is drawn out, the lower is the monthly or yearly rate of change. But in spite of the length of the period of contraction of the 1929-1933 downswing, the monthly rate of decline was great, too.

However, the contraction did not proceed at an even pace throughout. There were faint signs of revival in the first couple of months of 1930. Again, in 1931, the behavior of many production indexes led many to believe that the end of the recession was at hand. But in the fall of 1931, following the international financial crises, the roof caved in; all hell broke loose. The nation, slowly at first, and then at an increasing tempo, fell into the grip of one of the worst financial panics and crises in its history. On this account, it may not be unprofitable to divide the period of contraction into two phases, the first phase covering the first year and a half, the second covering the period between the fall of 1931 and March of 1933. The first of these phases was primarily domestic in origin and character. At the end of it there were signs that the decline had run its course. In view of the stagnation of the thirties, however, it is doubtful whether a real, buoyant major upswing would have developed. While there may be room for debate on this score, the whole subject must remain in the realm of pure speculation. For the collapse of the international gold standard in late 1931 worked such havoc on business confidence that if the marginal efficiency of capital ever had a chance to recover, this chance disappeared along with the gold standard in 1931.

Following the downturn of industrial production, in June of 1929, the stock market crash brought things to a head and gave strong impetus to the contraction. Many time series which had started downward in a rather hesitant manner lost this hesitancy in the closing months of the year. The stock market crash undoubtedly made a strong contribution to this quickening of the rate of decline. There is, first of all, the psychological blow that this event must have dealt to businessmen's expectations. The effects on expectations make themselves felt in numerous ways. Estimates of future revenues are reduced. The risk component of the discount

rate in the capitalization process rises, greatly reducing estimates of present value of future revenue streams from capital goods. The collapse of stock prices also tends to advance the cost of equity borrowing considerably, raising the yields on stock securities to prohibitive heights. Such was the case in the three years following the crash. New issues of stocks fell to tiny fractions of their volume of 1928 and 1929.

More important, perhaps, was the effect on the rate of consumer spending, especially on consumer durables, that the collapse of stock prices must have had. We noted earlier the huge volume of speculative incomes that developed out of the surging rise in stock prices. For people who are in the stock market on a more or less permanent basis, the gains from rising share prices will ordinarily be treated as *capital* gains, not as income. But when the public at large starts to participate in and provide the basis for a real speculative boom, we have large groups who will regard gains from the sale of stocks at inflated prices as current income. In a majority of cases, these incomes are so much "gravy," unlooked for but cordially welcomed. The result is apt to be an important stimulus to consumer spending, particularly on consumer durables of all sorts. There is little doubt that the speculative gains on the stock exchanges provided an important source of demand for consumer durables in the late twenties. The crash in the market not only meant the end of these speculative gains to many people, but also resulted in widespread speculative losses to large numbers of them. Undoubtedly, we have in this factor a severe damping influence on consumption in the initial phases of the downswing.

There is some danger of exaggerating the depressive effects exerted by the collapse in stock prices, particularly on investment decisions. As the market assumed the characteristics of a runaway spree of speculation, it must have become increasingly evident that the share price rise could not last. Therefore, the collapse in stock prices probably was not too much less expected than was the general price collapse in the recession of 1919-1921. Some supporting evidence for this thought can be found in the income velocity of money. The figures for this variable in Table 15 of the preceding chapter show it to have fallen in 1930 to its level of 1928. Most of

the decline can be explained by the release of cash from the financial circuit. There was no rise in the quantity of money in circulation, one of the sure signs of a wave of pessimism. Moreover, there was no decline in bond prices; in fact, they actually rose one to two points in price. At the very least, there was no rush into liquidity.

Other factors indicate that there was nothing resembling a wave of pessimism and fear of widespread collapse at the outset of the downturn. There was, for instance, a 26-point rise in the average of industrial share prices between the end of 1929 and the end of April of the following year, a 4-point recovery in the industrial production index between December of 1929 and February of the next year, and a comparative steadiness in department store sales. We might cite, in addition, the slowness with which business attempted to force down wages. The index of hourly wages fell only a point during 1930, giving some indication that business were not very pessimistic concerning the course of future prices and revenues. Thus, while we cannot characterize the first six months or so of the decline as a period of optimism, it does not appear to have been marked by undue pessimism. On the whole, we might say that the business community adopted a "wait and see" attitude.

The Federal Reserve System, meanwhile, was doing its bit to see whether a policy of easy money couldn't be used to stem the downswing and, perhaps, even convert it into an upswing. Beginning in November, 1929, almost 400 million dollars of government securities were purchased within the next five months. However, for some unaccountable reason, almost 100 million dollars of acceptances were unloaded, so that the System's holdings of securities increased approximately 300 million dollars. At the same time rediscount and acceptance rates were lowered again 1 to 2 points by the spring of 1931. The open-market purchases of the Reserve System enabled the member banks to reduce their indebtedness to the Reserve Banks and induced them to lower customer rates 1 to 1.5 percentage points on customer loans and to reduce the rates on prime paper 3 points by the middle of 1931.

The differences in the amount of reduction of rates on the two categories of loans make one suspect the apparent willingness of the banks to lend freely. These are signs that they may have been re-

luctant to lend on anything but gilt-edged (or the equivalent) collateral. Moreover, as one writer has remarked, the rates on customer loans are the published rates; they do not indicate how many loans were refused to customers of other than the highest type of credit rating. The relative maintenance of customer discount rates suggests that the banks were already beginning to resort to credit rationing on a wide scale.

In the spring of 1930 things really took a turn for the worse. By the end of the year all business indexes had fallen sharply, including those which had shown some tendency toward steadiness in the beginning of the year. The index of factory employment dipped sharply during the year. In the last two months the amount of money in circulation began to increase for the first time since November, 1929, a most ominous sign. Bond prices dipped over 3 points, while stock prices fell 39 points in the last three months. These were signs of increasing pessimism and liquidity preference.

In the winter of 1931 things took a slight turn for the better. The industrial production index rose 5 points between the end of January and the end of April. The index of factory employment stabilized itself after its sharp decline in the previous year. Bond and stock prices recovered some of their lost ground.

There were many who felt that the end of the recession had been reached. This was the period when President Hoover whistled hopefully in the dark, assuring everyone that "prosperity was just around the corner." Between July and August the Federal Reserve System added another 100 million dollars of securities to its holdings; rediscount rates were lowered an additional 0.5 per cent. The easy-money policy was hopefully being continued.<sup>1</sup>

In view of the nature of the origins of the downswing, plus the low level of investment all during the thirties, the present writer doubts that there was anything significant or fundamental in the developments of the first part of 1930. However, there is no certain way of knowing what would have happened to the domestic sectors of the economy in the absence of developments in the inter-

<sup>1</sup> It is interesting to note that the Federal Government did not see fit to engage in anything so radical as a deficit-financed budget. Until the middle of 1930, the cash budget showed a surplus.

national spheres. In the middle of 1931 a series of financial crises began abroad, which culminated in the abandonment of the gold standard by many countries, shaking American confidence to its very teeth.

The sources of financial difficulties abroad are all too numerous to go into here. But one of the chief difficulties was the rather sudden decline in the supply of American dollars. This was at once the result of the discontinuance of long-term loans abroad by American investors plus the sharp decline in American imports following the contraction in the U.S. Adding to European difficulties was the enactment of the Hawley-Smoot Tariff Act, which raised tariffs to their highest level in American history and made it virtually impossible for foreign countries to export to the U.S. and obtain American dollars. As a result, many countries attempted to force exports and reduce imports in an effort to gain a supply of dollars. This they did by cutting domestic prices.

The strain of the American contraction, however, was too much, and such efforts were in vain. The alternatives then were either the tightening of belts and the sharp regulation of foreign trade to achieve the goal of a supply of dollars or else the departure from the gold standard and the depreciation of exchange as a means of stimulating exports. The imminence of the latter course of action brought the situation to a head, finally leading, through drains caused by "hot money" movements, to the abandonment of the gold standard by England and ultimately most of the important countries of the world, including the U.S.

The more immediate causes of the international financial crises which beset the world in 1931 are found in Austria and Germany. In May and June of that year, the two chief banks of these countries were faced with runs, and they were saved only by drastic government measures that amounted to government guarantees. However, the panic in Germany led to such a sharp withdrawal of short-term funds that the government was forced to suspend payment on Germany's short-term debts in order to stop the flight of short-term funds. London, however, had been a large lender of short-term capital to Germany, and the so-called Standstill Agreements of Germany led to growing doubt concerning the status of the London



money market. In addition, further distrust arose from the resort to (horrors) deficit financing by the MacDonald government in England. A flight of short-term capital from England then developed, as foreign banks attempted to ensure the safety of their money. The result was a tremendous outflow of gold from England, which the Bank of England was helpless to stop. Faced with the alternative of either imposing sharply deflationary measures on a country already depressed, or releasing the pound from its link to gold, England chose the latter course of action, as might be expected.

The collapse abroad and the various exchange restrictions which followed resulted in a sharp curtailment of American exports, a situation which added to the forces of contraction in the U.S. The psychological effects of such previously unheard of events as the English departure from the gold standard and the loss of foreign markets dealt a lethal blow to the confidence of the U.S. public and in the months surrounding these international events, the rate of contraction in the U.S. was actually accelerated.

Following the collapse abroad, the repercussions of these events quickly made themselves felt on the U.S. banking system. The most ominous event was the conversion of almost 400 million dollars of bank deposits into currency in circulation within the space of the last four months of 1931. In addition, the banking system lost another 150 million dollars in gold reserves in the same period, over 337 million dollars in October, but recovered some of this in the last two months.

Confronted with signs of a growing liquidity crisis, the Federal Reserve System acted in an almost incredible manner. In the first place, it failed to purchase enough securities in the open market to offset the effects on bank reserves of the drain of cash into circulation and the loss of gold. Then, following traditional (and deadly) doctrine, it raised rediscount and acceptance rates as much as 2 per cent and announced itself ready to lend freely to all borrowers in dire need, the test of the latter being the willingness to pay the higher rediscount rates. Rediscounts rose sharply, going over 1 billion dollars at the end of the year from a low of 0.25 billion dollars four months earlier. The policy of compelling the banks to rediscount to acquire reserves in these critical times, instead of provid-

ing them with cash via open-market purchases, virtually forced the banks to unload immense quantities of securities into markets which were already showing signs of cracking at the seams. Over 3.5 billion dollars of loans and investments were liquidated in the last three months of 1931, plus an additional 1.5 billion dollars of other assets.

The effects on the credit markets can be imagined. Corporate bond prices fell 15 points in the last four months of the year, stock prices 24 points. Yields on long term corporate securities rose 1 to 3 percentage points, depending on the quality. Even the yields of gilt-edged governments rose over a point. These facts reveal a state of collapse on the securities markets. Discount rates rose from 3.50 per cent to 4.55 per cent in New York City, while rates on open-market acceptances and prime commercial paper rose 2 percentage points, reflecting the tightness of credit.

The number of bank suspensions soared, as the banks were confronted with the pressure of a heavy public demand for cash and outflow of gold, on the one hand, and, on the other, with illiquid assets in the midst of the general rush into liquidity—all the while receiving a minimum of aid from the central bank. On top of all this, the fiscal authorities in the Administration, to keep "unimpaired (the) credit of the Federal Government," asked for reductions in government spending and increases in taxes. Increases were obtained in the most deflationary taxes imaginable—excise and stamp taxes, to the tune of over 0.6 billion dollars a year. The type of thinking that apparently dominated the minds of the monetary and fiscal authorities is almost unbelievable in the modern age of fiscal theory.

To free the hands of the Federal Reserve System, whose lack of stronger action was partly due to the laws under which it was operating, Congress passed the Glass-Steagall Act in February, 1932. This act permitted the Reserve banks to deposit government securities as collateral against the issue of Federal Reserve notes, instead of gold and discounted paper as the Reserve Banks had been required to do in the past. This did away with the need for rediscounting by the member banks in order for notes to come into circulation and permitted the Reserve System to engage in the greatest open-market purchase program of its existence. Well over 1 billion

dollars of government securities were acquired in the period between March and August of 1932.

These badly needed actions on the part of the Federal Reserve System greatly alleviated the strain on the monetary system. It enabled the banks to meet the public's demand for cash with much greater ease, which meant, specifically, with much less resort to the liquidation of assets. Rediscounts at the Reserve Banks were reduced 0.6 billion dollars, so that member banks reduced discount rates on customer loans and prime paper from 1 to 2 points. The effects on the long-term securities markets were also evident; security prices slowed down in their headlong decline and even rose a little in the summer of 1932. Again, the relative movements in the different categories of short-term interest rates may be taken as an indication that only those customers with the highest credit ratings were being granted loans. Credit was still very tight, and bank loans continued to contract at a high rate.

The worst was yet to come. Following a short reprieve, during which the public returned some cash from circulation, a renewal of the rush into liquidity started, one which was to lead to the collapse of the monetary system. The panic started slowly enough, but in February of 1933 rose to torrential proportions. In this one month some 1.5 billion dollars in cash flowed into circulation. The Federal Reserve System reverted to its earlier position of not engaging in open-market purchases (it actually sold a small amount of securities), but instead raised rediscount and acceptance rates and waited for the needy banks to rediscount. While rediscounts rose almost 0.8 billion dollars, the strain on the banking system was too great this time. The collapse of asset values, under the pressure of the widespread rush into liquidity, made it impossible for vast numbers of banks to remain open, the number of suspensions finally reaching such figures that the President was forced to declare the memorable bank holiday.

By the time the bank holiday was declared, the country was in the grip of a creeping paralysis. Virtually all indexes of business activity were at half their levels of 1929. Unemployment, including those on work relief, exceeded 15 million workers. Construction activity had practically stopped altogether, the index of the

value of construction contracts having fallen from 126 in June of 1929 (the month of the downturn) to the unbelievably low figure of 14 in March, 1933. No better indication of the general rush into liquidity (hoarding) and almost insatiable demand for cash can be found than the figures on income velocity and the supply of money in circulation. The figure of income velocity (2.28) represented the lowest value for this variable in the twentieth century up to that time.

### *The Revival of March, 1933*

Shortly after the Administration ordered all banks closed, a series of banking acts was passed, which broadened the base against which the Federal Reserve System could issue Federal Reserve notes, primarily by enlarging the scope of use of U.S. securities as collateral. Other credit agencies were established in the home and farm mortgage fields. The Reconstruction Finance Corporation, established in the previous year, loaned huge sums of money to insolvent banks. In June, deposit insurance was put on a formal basis.

The banks were enabled to reopen four days after they had been closed. A reassured public stopped its mad rush into cash for the most part, while the banks, aided by increased liquidity of assets in the mortgage field, expanded open-market operations by the Federal Reserve System, and the lending activities of the R.F.C. were once more in a solvent and liquid state. On a net basis, cash returned rapidly to the banks. The structure of short-term interest rates fell approximately 2 percentage points on the average. Bank loans and investments expanded somewhat. By the beginning of summer it was evident that the banking crisis was at an end. Confidence in the soundness of the money system, at least, had been restored, and bank credit regained a measure of elasticity.

While the end of the liquidity crisis was an obvious prerequisite to a revival in economic activity, it is certainly insufficient to explain the revival itself. As we have noted in another connection, the behavior of inventory investment provides the basic explanation of the revival of gross investment activity in the business sector of the economy. In Professor Kuznets' figures, it is to be seen (Table 14 in the previous chapter) that the tremendous rate of *disinvestment*

in inventories that began in 1930 slowed down sufficiently in 1933 to allow the total of business investment to rise in that year. In 1932 3.1 billion dollars of gross investment in business plant and equipment had been offset by some 2.4 billion dollars of disinvestment in inventories. In 1933 the rate of disinvestment in inventories fell to 1.1 billion dollars, while outlays on plant and equipment stabilized at 3.0 billion dollars. The result was a rise in gross business investment from 0.7 billion dollars in 1932 to 1.9 billion dollars in 1933.

The Federal Government did its bit to help the revival, although it did so quite unwittingly and apparently in spite of itself. The national government, still dominated by antiquated thinking in fiscal matters, undertook a campaign of economy in various Federal departments, the Administration ordering salary cuts and other economies. In spite of itself, however, the government was forced by the emergency expenditures of the period to spend a total of 3.9 billion dollars in the fiscal year ending in June, 1933. Actually, this represented a 0.6 billion dollar reduction below the figure for the deficit in the fiscal year before. Nevertheless, outlays of 1932-1933 represented an increase of 0.2 billion dollars over that for the fiscal year ending June, 1931. On this account, it seems preferable to maintain that government budget policy was on the whole inflationary in the period surrounding the revival.<sup>2</sup> Moreover, after 1933, the Federal Government's budget deficit was a basic source of expansionary influence to a badly depressed economy. In 1934 outlays totaled 6.0 billion dollars, in 1935 7.0 billion, in 1936 8.7 billion, in 1937 8.2 billion, in 1938 7.2 billion, and in 1939 8.7 billion. The importance of these figures may be seen in a comparison of them with the values for gross private domestic investment in the corresponding years. From 1933 through 1939 the annual values for this investment figure expressed in billions of dollars were 1.3, 2.8, 6.1, 10.5, 11.4, 6.3, and 9.0, respectively. The importance of the budget deficits to the upswing that began in March, 1933 may be

<sup>2</sup> There had been signs of revival in 1932 just before the final banking crisis. It is more than possible that the 4.5 billion dollar outlays in the fiscal year ending June, 1932 had something to do with this. The overwhelming effects of the liquidity crisis, however, swamped everything in its path, so that whatever stimulus was offered by Federal deficit spending was surely wiped out.

seen in the positive correlation between the size of Federal expenditures and the behavior of gross national product between 1933 and 1939. An important source of deflation during the collapse of 1937 is to be found in the rather sizeable reduction in government expenditures during the fiscal year ending June, 1938.

The establishment of the National Recovery Administration must be recorded as another source of stimulus to the revival of March, 1933. The economics of the N.R.A. was of the worst possible sort, and from the long-run point of view, it was anything but conducive to a revival and vigorous upswing in national income. For it preached, above all, the virtues of restriction. Its fair trade codes turned out to be neat devices for enabling members of various industries to come to (legalized) agreements on output and prices, and, in most instances, the emphasis was on less output and higher prices. The end result was an increase in the degree of monopoly in the economy, primarily through the development of the trade association, many of whose practices were developed and refined during the lifetime of the N.R.A. The original legislation even went so far as to include provisions enabling members of an industry to agree to curb the installation of new plant and equipment if they found that sufficient excess capacity existed to warrant such restrictions. Provisions such as these offered potentially vice-like grips on the rate of investment in the economy, an economy that was already suffering, most of all perhaps, from a gross deficiency of private investment.

As a palliative to labor, the N.R.A. also contained provisions for raising wages. We have developed at length arguments against general wage reductions in times of depression. Similarly strong arguments can be raised against a policy of raising wage rates in the midst of a depression.<sup>4</sup> For the moment, the strongest argument against such a wage policy in the thirties was the extremely low state of expectations during this period. Thus, like the immediate post-World War I period, the general N.R.A. policy of trying to raise wages and prices was almost bound to be self-defeating, for the state of expectations virtually guaranteed that businessmen would hold back in anticipation of a fall in wages and prices. This

<sup>4</sup> Such arguments are developed in Chapter 15, pp. 606-609.

was apt to be particularly true in the light of the distinct artificiality of the manner in which wages and prices, both, were being raised. The negative values of net business capital formation (column 3 in Table 17) for the thirties plus the extraordinarily important role of inventory investment are certainly indicative of the prevailing pessimism and the low levels of the marginal efficiency of capital during this period.

For all these condemnations of its economics, and we have been lenient in our criticism, the N.R.A. had a certain short-run salutary effect on the economy. The basis for this was primarily a psychological one. For one thing it signified that the administration was taking *action* (even if it turned out to be bad action in the long run), and what the nation was looking for was action. Somebody in the White House, with a reassuring golden voice to boot, was *doing* something. At the same time, it freed business enterprise, temporarily at least, from those "harassing" antitrust laws; in fact, it gave business, literally, a free hand to write its own ticket of public policy. Free competition had not worked so well of late, and there were many who were desirous of some vacation from the government lawyers and their damnable antitrust laws. All in all, the act turned out to be a sort of stopgap affair, which helped raise the morale of the public from its low ebb. A wave of enthusiasm swept the nation as virtually everyone sought to join together under the emblem of the Blue Eagle. While it is impossible to gauge, with any semblance of accuracy, the precise effects on the volume of economic activity of this (apparently temporary) surge of optimism, its role, at the moment at least, was an important one.<sup>4</sup>

### ***The Period 1933-1936***

From its low of 59 in March, 1933 the index of industrial production rose rapidly, and by July it had risen to 100. The economy had

<sup>4</sup> Ironically enough, when the N.R.A. was declared unconstitutional in 1935, the nation heaved a sigh of relief. Everyone, business, labor, and the consumer alike, was thoroughly sick of the whole thing, the consumers because they felt they were being highjacked by higher prices, labor because it thought that business had received the best end of the deal, and business because it had become quagmired in a hopelessly complex system of regimentation.

**Table 17 Gross National Product and Its Component Parts, 1933-1938 \* (in Millions of Dollars)**

| Year | (1)<br>Gross<br>National<br>Product<br>(Current<br>Prices) | (2)<br>Gross<br>Capital<br>Formation | (3)<br>Net Business<br>Domestic Capital<br>Formation<br>Exclusive of<br>Net Changes<br>in Business<br>Inventories | (4)<br>Net Changes<br>in Business<br>Inventories | (5)<br>Flow of<br>Producers<br>Durables | (6)<br>Busi-<br>ness Con-<br>struc-<br>tion | (7)<br>Resi-<br>dential<br>Con-<br>struc-<br>tion | (8)<br>Private<br>Construc-<br>tion (6) + (7) | (9)<br>Pub-<br>lic Con-<br>struc-<br>tion | (10)<br>Con-<br>sump-<br>tion † |
|------|------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------|---------------------------------------------|---------------------------------------------------|-----------------------------------------------|-------------------------------------------|---------------------------------|
| 1933 | 55,760                                                     | 2,728                                | - 4,696                                                                                                           | - 1,619                                          | 1,783                                   | 684                                         | 321                                               | 1,005                                         | 1,213                                     | 42,946                          |
| 1934 | 64,868                                                     | 5,591                                | - 3,793                                                                                                           | - 1,144                                          | 2,531                                   | 806                                         | 415                                               | 1,231                                         | 1,535                                     | 51,882                          |
| 1935 | 72,193                                                     | 7,941                                | - 3,052                                                                                                           | 905                                              | 3,351                                   | 887                                         | 761                                               | 1,648                                         | 1,462                                     | 56,215                          |
| 1936 | 82,483                                                     | 11,104                               | - 1,873                                                                                                           | 1,004                                            | 4,531                                   | 1,251                                       | 1,235                                             | 2,486                                         | 2,228                                     | 82,515                          |
| 1937 | 90,213                                                     | 10,617                               | - 760                                                                                                             | 2,309                                            | 5,444                                   | 1,784                                       | 1,490                                             | 3,274                                         | 2,034                                     | 87,121                          |
| 1938 | 84,683                                                     | 8,910                                | - 2,741                                                                                                           | - 973                                            | 3,975                                   | 1,326                                       | 1,615                                             | 2,941                                         | 2,077                                     | 64,513                          |

\* Source: U.S. Department of Commerce, *Survey of Current Business*, National Income Supplement (July, 1947). In order to achieve consistency among the data in this table, we have reverted again to 1933 in the use of the Department of Commerce data. The bases for computing the data differ somewhat in Professor Kuznets' study from those employed by the Department of Commerce; hence the differences in figures in overlapping years.

† Consumption is computed directly by the Department of Commerce.



need of a shot in the arm and apparently had received it. Evidently, though, the effects of the "hypo" were very temporary, for by December the production index had receded to 75. A similar path was followed by the index of factory employment, although with considerably less amplitude. The same was true of all other business indexes; even construction activity revived a bit, and the index of contracts awarded rose steadily from March to December, starting at a low of 14 and reaching a high of 57. However, this important index tailed off rapidly the year following.

During the next two years, 1934 and 1935, economic activity fluctuated rather uncertainly, the values of the various business indexes rising for a few months and receding again. The yearly averages rose, however, albeit slowly. The annual index of industrial production (unadjusted) rose from 64 in 1932 to 76 in 1933, to 79 in 1934, and to 90 in 1935. Thus there were signs of recovery, but it was slow, unsteady, and quite anemic. Gross national product rose slowly. Net business investment in plant and equipment remained at tragically negative levels. It was clear that what (gross) investment was taking place was, for the most part, being confined to replacement investment, and even the latter was not keeping up with capital depreciation, etc. Unemployment continued deplorably high and in 1935 ranged around a figure of 12 million (including those on work relief).

The amount of hoarding that was going on diminished but little. Despite the vast increase in the money supply (shown in Table 18), it is evident that only some of it was being used for transactions purposes; prices rose little, even with the tremendous expan-

**Table 18 Behavior of Money and Prices, 1933-1938**

| Year | (1)<br>Money Supply<br>( $M + M'$ ) | (2)<br>Gross<br>National<br>Product | (3)<br>Income<br>Velocity<br>$2 \div 1$ | (4)<br>Cost-of-<br>Living<br>Index<br>1935-1939 = 100 |
|------|-------------------------------------|-------------------------------------|-----------------------------------------|-------------------------------------------------------|
| 1933 | 20.0                                | 55.76                               | 2.79                                    | 92                                                    |
| 1934 | 23.1                                | 64.87                               | 2.81                                    | 96                                                    |
| 1935 | 26.0                                | 72.19                               | 2.78                                    | 98                                                    |
| 1936 | 30.1                                | 82.48                               | 2.74                                    | 99                                                    |
| 1937 | 31.4                                | 90.21                               | 2.87                                    | 103                                                   |
| 1938 | 30.3                                | 84.68                               | 2.79                                    | 101                                                   |

sion in the money supply and the comparatively small increase in gross national product. The (slight) *decline* in income velocity tells a story. Of the hoards that had been accumulated in the course of the series of liquidity crises of the early thirties, virtually none of them was touched to finance the higher level of transactions that accompanied the higher level of gross national product and slight rise in prices. Extra transactions balances were supplied from the increase in the money supply. That a part of the increase in the money supply was also absorbed into additional precautionary and speculative cash balances is evident from the general decline in the structure of interest rates that occurred. Yields on all types of bonds reached their lowest levels in the postwar period. The structure of short-term rates also fell to similarly low levels, the rate on prime commercial paper falling, for example, from 3.00 per cent in March, 1933 to 0.75 per cent in 1935. The rates on customer loans fell from 4.79 per cent in March, 1933 to a low of 1.66 per cent in September, 1935. These figures give some indication that the supply of credit had a fairly large degree of elasticity. As we have remarked before, however, it is difficult to judge from these figures just how elastic the supply of credit actually was. The rates just quoted are published rates. They do not tell how many loans were denied by banks to customers whose credit status was not very high. The unprecedented lowness of the entire interest rate structure may have also been responsible for an indeterminate amount of speculative hoarding by the banks as well as nonbank lenders. High levels of corporate cash balances during this period attest to the abiding desire for liquidity on the part of business enterprise. All these factors add up to widespread precautionary and speculative hoarding on the part of all elements in the community.

***The Inventory Boom of 1936-1937 and the Collapse of the Upswing in the Spring of 1937***

In May of 1936 an inventory boom developed. Widespread speculative hoarding of inventories took place as prices began to rise rapidly. The reasons for this speculative boom are varied, and most of them are exogenous factors, a coincidence of chance occurrences. In the first place, there was a world-wide accumulation of

raw material stocks, together with an international rise in their prices, both the product of international developments which made the prospects of war grow stronger. There were the spectres of Hitler and Mussolini looming increasingly large on the horizon; the war in Spain was in progress.

On the domestic scene, there was the declaration of the Veterans' bonus, amounting to the sum of 2 billion dollars, in the summer of 1936. The stimulus which this (deficit-financed) outlay gave to the economy is seen, for example, in the 6-point rise in the index of department store sales which occurred in the three month period following the bonus declaration. Production indexes also shot up in the months following the bonus declaration. It is only natural, too, that businessmen should have speculated on the effects of the bonus and built up inventories through increased orders and hoarding, both in anticipation of an increase in the rate of consumer demand and a rise in prices.

The late fall of 1936 also marked the landslide election victory of President Roosevelt. While later on the business world was to develop an intense dislike for his policies, this election took place at the pinnacle of Roosevelt's popularity. Here was the man of action, whose golden voice brimmed with reassuring confidence in those remarkable fireside chats. Moreover, the Administration's policies had been of the inflationary variety in the eyes of many, and the reelection of the President appeared to ensure the continuance of these inflationary policies. It is probable that many members of the business community expected these to provide further fuel for the rise in prices that was already in evidence. These are psychological intangibles, which are exceedingly difficult to measure, but which demand recognition.

Finally, there was the rise in wage rates which was taking place during the period under examination. The year 1936 was one in which the newly formed industrial unions were increasingly coming to feel their oats. The Wagner Act had been passed, taking up where the N.R.A. had left off and giving the unions the right to bargain collectively and freely, and resort to the strike (without the fear of antagonistic government intervention) to gain their demands. There was an outburst of strikes and, of course, demands

for higher wages. The trust of businessmen that rising wages would force prices up in a spiralling effect must be added to the list of factors responsible for the inventory boom that began in the spring of 1936.

The fact that the boom under examination was an inventory boom is clearly seen in the relatively large role that inventory investment played in the upswing. Thus 24 per cent of the value of gross business investment took the form of inventory accumulation. This figure contrasts sharply with the average of 12 per cent of gross business investment that took the form of inventory investment in the period 1922-1929. Again, over 47 per cent of the *increment* in gross business investment between 1936 and 1937 took the form of investment in inventories; this figure compares favorably with the figures for the inventory booms of the twenties.

We stress the nature of the boom that took place between the spring months of 1936 and 1937 because it is indicative of the basic outlook that dominated the thinking of businessmen in the thirties. The fact that a comparatively small portion of gross investment was put into plant and equipment, and of the latter, what there was was purely for replacement purposes, is symptomatic of the extremely low level of the marginal efficiency of capital that related to durable investment. While there evidently was some optimism in the course of the boom we are discussing, it is clear that it was strictly of the short-run variety. The fact that so much investment went into easily liquidated inventories reveals how short-lived businessmen expected the boom to be.

And the boom was short-lived. Starting in Spring of 1937 the boom ended and turned into a recession whose intensity of contraction has few parallels in business-cycle history. By December of 1937 the index of industrial production had fallen from 118 in May to 84, the lowest it had been since the fall of 1934. In 1938 unemployment returned to its 1934 levels, too, ranging around levels of 12 and 13 million (including those on work relief).

What were the reasons for this collapse in economic activity? Perhaps the most important reasons were the monetary actions taken by the Administration and the Federal Reserve System. Since 1934 the combined effects of deficit-financed government outlays plus the

unprecedented volume of gold inflows had been building up the cash position of the public, bank and nonbank alike, to levels which were beginning to worry the monetary and fiscal authorities; the latter feared that the enormous growth in liquidity would provide the basis of a runaway inflation. A series of deflationary actions was, therefore, begun in the summer of 1936. First, the Federal Reserve System raised member bank reserve requirements as a means of wiping out a large portion of the banks' excess reserves, by May of the following year, reserve requirements had been doubled. Meanwhile, the Treasury was doing its bit by sterilizing gold imports. At the same time, both Federal Reserve and Treasury officials were issuing statements warning of the "dangerously high" price level. Neither action had as its goal the reduction in the national money income; the goal was simply the slowing down of the rate of monetary expansion.

Unfortunately, this was no time to be making credit conditions tight. With the business community already skeptical of the soundness of the upswing, such actions could serve only to reinforce their skepticism. As soon it became apparent that a series of deflationary actions was being carried out, it was only natural that businessmen should become convinced that their pessimism was warranted, and they reacted accordingly. New orders began to fall off rapidly as businessmen hastened to retrench and endeavored to reduce their inventories. As things turned out, the contraction in national income took place at too rapid a pace, and the efforts to reduce inventories were frustrated; instead they continued to pile up right through the best part of the year.

In addition, there were predictions of very large agricultural crops the world over. Internationally and on the domestic market, raw material prices began to fall. The combined effects of declining raw material and other commodity prices plus *involuntary* or unplanned accumulations of inventories led to a still further decline in new orders, and, by the last two months of 1937, an abrupt decline in current production had set in.

A factor which cannot be omitted is the budgetary policy pursued by the Administration. Administration advisers and officials became convinced that the upswing that began in 1936 was a sign

of the end of the depression. Only with great reluctance had Federal expenditures been financed through borrowing since the depression began. The thinking of Administration officials was still dominated by ideas that the Federal budget had to be balanced if the credit of the national government was to be maintained. Only the exigencies of the times, the necessity of providing relief and some work for the unemployed, forced the Administration into levels of spending which could be met only by (bank) borrowing. Consequently, when it appeared that the depression was at an end, those in charge of fiscal policy were quick to seize this opportunity to curtail government spending and work toward a balancing of the budget. The year 1937 also found Social Security taxes raised 2 per cent over their 1 per cent rate of 1936, the year they were begun. Nor was it an accident that these taxes were raised at this time. Increasing Social Security taxes was regarded as a means of bringing the cash budget, at least, into balance. And it did. Whereas 3.8 billion dollars was borrowed by the Federal Government in the *calendar* year of 1936, only 0.3 billion dollars was borrowed in 1937. This meant a drop of 3.5 billion dollars in the government's net contribution to the national money income stream. This was a terrific deflationary force to impose on the economy at this time, and we must reckon this factor among the most important elements which are responsible for the initiation of the downswing in the Spring of 1937.

A possible source of deflation was the behavior of consumer spending. It appears difficult to make a case for the workings of the acceleration effect, since the fall in the rate of growth of consumption in 1937 may be partly explained by the fall in the growth rate of income. The sharp fall in the rate of growth of consumption in 1938 is amply explained by the abrupt decline in national income which occurred in this year.

However, there was a slight decline in the average propensity to consume in 1937. This may or may not mean that a decline in the marginal propensity to consume took place (it is impossible to determine statistically). Some writers have noted a fairly strong degree of consumer resistance to rising prices in the face of low, and lagging increases in, personal incomes. This could mean a falling

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marginal propensity to consume in *real* terms, a factor which would explain, at least in part, some of the involuntary accumulations of inventories with which businessmen found themselves confronted.

**Table 19 Consumption and Investment, 1933-1938**

| Year | (1)<br>Net Changes<br>in<br>Business In-<br>ventories | (2)<br>Net Business<br>Capital<br>Formation (Ex-<br>clusive of Net<br>Changes in<br>Business Inventories) | (3)<br>Rate of Growth<br>of<br>Consumption | (4)<br>Consumption<br>as a Percentage of<br>Gross National<br>Product |
|------|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------|
| 1933 | - 1,619                                               | - 4,778                                                                                                   | - .06                                      | .83                                                                   |
| 1934 | - 1,144                                               | - 3,881                                                                                                   | .12                                        | .80                                                                   |
| 1935 | 905                                                   | - 3,131                                                                                                   | .08                                        | .78                                                                   |
| 1936 | 1,004                                                 | - 1,902                                                                                                   | .11                                        | .76                                                                   |
| 1937 | 2,309                                                 | - 744                                                                                                     | .07                                        | .74                                                                   |
| 1938 | - 973                                                 | - 2,691                                                                                                   | - .04                                      | .76                                                                   |

On the whole, the case for an underconsumptionist explanation of this contraction is more difficult to sustain than it was for the minor recessions of the twenties. A very important reason for doubting the validity of such a thesis in this case is the extreme levels to which living standards had fallen since the advent of the Great Depression. On a priori grounds one would expect consumers to make some efforts to regain former living standards as soon as there was the slightest opportunity. There certainly was no problem of adjusting to previously unaccustomed planes of living, unless it was the aforementioned rise in prices.

### AN ANALYSIS OF THE STAGNATION OF THE THIRTIES

At no time during the thirties, until 1939, under the impetus of war output, did either gross or net national product, in money or real terms, reach the levels of these variables in 1929. In *real* terms, gross national product fell 3.3 billion dollars short of its 1929 level at its peak in the upswing of 1937; net national product was 2.9 billion dollars short of its 1929 level at its 1937 peak. Thus at no time did the nation ever recover its 1929 living standards during the thirties. The picture is made even worse when it is recalled that the population grew by some nine million people during the decade, so that the decline in per capita income (and, therefore, living stand-

ards) was even greater than is indicated in a comparison of totals. Given the normal advances in technology that took place, and along with these the growth in productivity, and the picture gets even blacker. Of course, there was also the never-to-be-forgotten mass of unemployment that characterized the thirties. Unemployment averaged in the neighborhood of 11 to 12 million people (again, including those on work relief) in the period 1931-1939. Moreover, such figures do not cover those who were but partially employed throughout most of this period. Estimates of the amount of income that could have been produced, given the productive capacity of the nation during the decade of the thirties, but wasn't because of the mass employment of all resources, range from 300-350 billion dollars. The period is indeed a blot on the economic history of man.

### *The Lack of Autonomous Investment: Construction*

We want now to enter upon a discussion of the reasons for this period of stagnation. If we assume that the consumption function is incapable of rising spontaneously to levels high enough to assure full employment without a radical reorganization of many of the economic and social institutions of the United States, the first reason for the prolonged slump of the thirties is, clearly, an overwhelming lack of autonomous investment. A glance at Table 16 will immediately reveal where the lack of autonomous investment appeared. While the production of producer durables was down in the thirties, it is patent that the great sore spots lay in the construction industry, both business construction and residential construction. There is little doubt that the thirties marked a period of trough in the construction industries. In commercial and residential building, especially, the market had been saturated during the twenties. The extent to which this was so is seen in the continuous decline in rent indexes even during the period of *rise* in national income between 1933 and 1937. This contrasts sharply with the early twenties, when rent indexes rose even while the national income was falling during the contraction of 1920-1921.

While there was some saturation in industrial construction, it would be quite unsatisfactory to stop here with our explanation. By far, the more important explanation of the low level of indus-



trial construction is the absence of great technological innovations on a scale comparable to those of the twenties. True, the automobile was not invented in the twenties, but the industry underwent a tremendous rate of expansion during most of this period. In addition, it was responsible for the development and tremendous expansion in the petroleum and rubber tire industries, and even in the steel industry. When investment in the automobile gradually assumed the character of induced investment in the latter part of the decade, certain consumer durable industries, like the radio and electric refrigerator industries, came along to take up the slack.

### *The Absence of Leading Industries in the Growth of Production*

The notable thing about the thirties is the almost total absence of an industry, or group of (related) industries, which reveal any startling rate of expansion in the manner that the automobile and related supply industries display in the previous decade. The only industry which held up its end of things was the electricity industry. Even in this case, the bulk of new investment seems to have come from the great electrification programs carried out by the Federal Government, through such projects as T.V.A., rural electrification, and the great dam projects such as Boulder and Grand Coulee. Some writers are inclined to attribute the absence of more *private* investment in the electricity industry to the rather uncompromising and inimical attitude the Administration took in its relations with the private utilities. While one might well question which side was more inimical in its attitude, the government or the utilities, it is probably true that the fear of continuous government encroachment acted as a considerable damper to private investment in the electricity industry.

Nevertheless, there remains no comparable excuse for other industries, old or potentially new. A comparison of the growth of production among manufacturing industries in the twenties and thirties reveals that most of the leaders of the twenties, which had been well above the average of all manufactures in growth of production, were all below the average growth of all manufactures in the thirties. And, most significant, no industries rose to take their places. ~~The figures show~~ further that the leaders in the growth of produc-

tion among manufacturing industries of the thirties clustered very much closer around the general average than did their counterparts in the twenties.

We have noted before that there is no thoroughly studied major cyclical upswing of the past which, if it bears the characteristics of vigor and buoyancy, does not also reveal a very conspicuous leadership on the part of certain industries in the rate of growth of production. When major cyclical upswings appear to have been of the stagnation variety, almost invariably they are without some industry or group of industries showing an extraordinary growth of output relative to other manufacturing groups. Hence it is not too surprising that the thirties should have turned out to be a period of stagnation.

The foregoing discussion relates to an absence of technological innovations primarily in the form of *products*. However, there are also strong indications that very little technological innovation occurred that took the form of improvements in productive techniques, at least on a scale that would visibly affect the rate of investment. We shall take as our criterion of investment representing technological improvements in production methods indexes relating to rates of growth of productivity per man-hour.<sup>5</sup> The most pointed evidence on the rate of technological innovation offered by these figures is the extreme difference in the rise in the rate of growth of productivity for manufacturing industry as a whole between the twenties and the thirties. Whereas the index of productivity for manufacturing as a whole increased 41.6 points in the period 1920-1929, it rose only 21.6 points in the period 1929-1937. Of course, the behavior of the productivity index for manufacturing as a whole is not necessarily indicative of the progress made in the other categories of industry. Thus just as the electricity industry more than held its own in its expenditures on investment, so it is virtually the only industry to show an important increase in the rate of growth of

<sup>5</sup> The following figures on productivity are based on estimates made by S. Bell, *Productivity, Wages and the National Income* (Washington, Brookings Institution, 1940); these figures are cited in T. Wilson, *Fluctuations in Income and Employment*, 3d ed. (New York, Pitman Publishing Corp., 1948), pp. 183-184. Productivity is estimated by dividing the index of output by the index of man-hours.

productivity; compared to an advance of 39.5 points in the twenties, its productivity index rose 75.8 points in the thirties.<sup>9</sup> But it is apparent that the events of the electricity industry were confined to it alone, for one thing, and were not sufficient to compensate for the decline in the rate of growth of productivity elsewhere, for another. To take two industries which are "heavy" industries, that is, use a great deal of capital per worker, and therefore are important channels of investment outlays, we may cite the automobile and steel industries. During the twenties the rate of growth of productivity in the automobile industry rose 74.9 points; in the period 1929-1937, this index increased only 6.3 points. The figures for the steel industry are 45.4 and 18.8, respectively.

These figures cannot be taken to mean necessarily that the rate of *invention* or discovery of new production techniques during the thirties was far below that of the twenties. But they may be interpreted, to a certain extent, to mean that what inventions, etc., were made during the thirties were apparently not important enough to burst through the veil of pessimism and result in the *innovation* of many of them. The figures on productivity just cited plus the figures on net business investment in Table 16 do hint strongly of the absence of technological discoveries that were of sufficient magnitude to produce a wave of new investment in industrial plant and equipment.

### ***Other Factors: The Decline in the Foreign Trade Balance***

While the foregoing factors provide the basic explanation of the stagnation of the thirties, there were certainly other elements in the situation, and these must be mentioned. One of these was the sharp decline in the U.S. export trade balance below the levels of the twenties. Not until 1938 did the merchandise trade balance even approach the levels of the twenties. The reason for this is clear, just as the reason for the continued credit trade balance during the twenties was obvious. Gone from the international scene in the thirties was the 1 billion dollar annual rate of American investment abroad. The resulting decline in America's export surplus must be

<sup>9</sup> The index of rate of growth of productivity rose slightly less than 2 points in the railroad industry and stabilized itself in the mineral industries.

recognized as one of the depressant factors on America's national income.

### *Government Policy and Business Confidence*

Another factor which must be recognized is the effect of certain new government activities on business confidence. Of these, perhaps the most important was the previously unheard-of level of Federal, *peacetime* deficit spending. Many in the business community were convinced that the Federal Government was leading the country to ruin as deficit spending continued and even increased in the course of the thirties. This attitude prevailed despite the fact that the economy was so dependent on the maintenance of these government deficits (if the positive correlation of gross national product and the budget deficits means anything at all).

To have avoided spending and balanced the budget, thus ignoring the vast millions of unemployed, would have been tantamount to inviting revolution. As a matter of fact, if any criticism is to be leveled at the Federal Government, it is that it did not spend enough, especially in the first years of the depression. Although Federal expenditures rose, they did not rise enough to offset, even, the sharp decline in state and local spending in the critical years up until 1936. And then total government outlays on construction only hovered about predepression levels.<sup>7</sup> To have financed what expenditures were made on anything but a deficit basis would have been worse than doing at all. Anything else would have meant a sharp rise in tax rates, than which nothing would have been worse. In spite of these reasons, it is undoubtedly true that the more conservative elements among the populace, the die-hards of *laissez faire*, were a bit overwhelmed by all the government activity.

Another development of the thirties which demands recognition concerns the behavior of wages. Beginning with the passage of the National Industrial Recovery Act, all the emphasis during the thirties was on higher wages. This pressure did not cease even after the N.R.A. was declared unconstitutional, for the Wagner Act

<sup>7</sup> On this subject, about which there is so much confusion, see E. Benoit-Simulyan, "Public Works in the Depression," *American Economic Review*, XXXVIII (March, 1948), pp. 134-139.

was passed in 1935, giving strong impetus to the organizing campaigns of the newly forming industrial unions. All these events, of course, combined to result in steady pressure to raise wages and add to the disillusionment of businessmen. Adding to the woes of the more conservative elements of the business community was the upholding of the Wagner Act by the Supreme Court. It appears that businessmen generally expected the Supreme Court to declare this legislation unconstitutional. When the legislation was upheld, instead, the business community was shocked and bitterly disappointed.

Of course, all these developments had the official and unofficial sanction of the Administration. As far as the Wagner Act is concerned, it is very likely to have come about regardless of who was in the White House. However, the administration's, and later the unions', policy of demanding higher wages was a bit short-sighted. The goal of both the Administration and the unions was a redistribution of the national income in favor of the high, marginal-spending wage groups, in an effort to raise the propensity to consume. While the goal was certainly commendable, the means employed to achieve it were somewhat less than that. It is apparent that businessmen were extremely pessimistic about the ability of the upswing that began in 1933 to maintain itself and give rise to a period of prolonged and vibrant boom in economic activity. The best evidence of this is the importance of net investment in business inventories during the upswing of the thirties. As we have previously noted, inventory investment affords an opportunity of "getting out from under" quickly and with a minimum of loss, in contrast with investment in durable plant and equipment. In the face of pessimistic expectations about the future course of business sales and revenue, the rise in costs occasioned by the rise in wages must needs have acted as a damping influence on investment activity.

In the end, it is extremely difficult to evaluate with any exactness the precise extent to which the various government activities of the thirties acted as a damper on the confidence of businessmen. Opinions vary widely, mostly on the basis of views with respect to the proper role of the national government in times of deep depres-

sion. With the exception of its wage policy and the N.R.A., however, there was little else the Federal Government could do in the thirties, so far as its over-all policy was concerned. This is particularly true of deficit spending. But whether or not government policy was soundly conceived, appropriate or inappropriate, it is probably true that businessmen were somewhat dismayed by the seeming extent of Federal activity and its "New Deal" bias. Nevertheless, we should be careful not to exaggerate the importance of this factor as an explanation of the deep pessimism of the thirties and the low level of business investment. While the antagonism of much of the business community toward the Administration's policies undoubtedly contributed to the extreme pessimism of the thirties, it was only one of the factors that did so, and, in the opinion of the present writer, a very secondary one at that. The low marginal efficiency of capital of the thirties was too much grounded in reality for it to be otherwise.

#### **RENEWED UPSWING AND THE FORTIES**

Since the economic developments of the U.S. after the recession of 1937-1938 were so dominated by military events, the present writer feels that the period between the end of 1938 and 1945 offers little that is of interest from the viewpoint of business-cycle theory. Hence we shall be content with a cursory survey of economic events up until 1945.

Starting in June, 1938, revival set in again, but in somewhat a wavering fashion. Until 1941, each year's industrial production was higher than that of the preceding year, but it consistently took a sharp spurt in production in the second halves of these years to accomplish this.

Instrumental in initiating this upswing were Federal Reserve and Treasury actions. Then came the developments in Europe, notably the Munich crisis, which made the outbreak of war imminent. How much relation there was between this latter fact and the revival in gross business investment it is difficult to say, but there was a sharp increase in the level of flow of producers' durables, and disinvestment in plant and equipment reached a low for the decade in 1940. Of course, to a certain extent this reflected

Table 20 Gross National Product and Its Component Parts, 1938-1949\* (in Millions of Dollars)

| Year  | (1)<br>Gross<br>National<br>Product<br>(Current<br>Prices) | (2)<br>Gross<br>Capital<br>Formation | (3)<br>Net Business<br>Domestic<br>Capital<br>Formation<br>(Exclusive of<br>Net Changes<br>in Business<br>Inventories) | (4)<br>Net Changes<br>in Business<br>Inventories | (5)<br>Flow of<br>Producers' Durables | (6)<br>Business<br>Construc-<br>tion | (7)<br>Residen-<br>tial Construc-<br>tion | (8)<br>Private<br>Construc-<br>tion | (9)<br>Public<br>Construc-<br>tion | (10)<br>Consump-<br>tion |
|-------|------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------------|-------------------------------------|------------------------------------|--------------------------|
| 1938  | 84,683                                                     | 8,910                                | - 2,741                                                                                                                | - 973                                            | 3,975                                 | 1,326                                | 1,615                                     | 2,941                               | 2,077                              | 64,513                   |
| 1939  | 91,339                                                     | 12,672                               | - 2,179                                                                                                                | 441                                              | 4,577                                 | 1,385                                | 2,234                                     | 3,619                               | 2,443                              | 67,466                   |
| 1940  | 101,443                                                    | 16,005                               | - 646                                                                                                                  | 2,275                                            | 6,108                                 | 1,717                                | 2,482                                     | 4,199                               | 2,608                              | 72,052                   |
| 1941  | 126,417                                                    | 22,951                               | + 615                                                                                                                  | 3,674                                            | 7,676                                 | 2,299                                | 2,938                                     | 5,237                               | 5,070                              | 82,255                   |
| 1942† | 161,551                                                    | 41,829                               | - 3,506                                                                                                                | 2,065                                            | 4,657                                 | 1,423                                | 1,459                                     | 3,007                               | 10,405                             | 91,161                   |
| 1943  | 194,338                                                    | 47,381                               | - 5,534                                                                                                                | - 922                                            | 4,082                                 | 867                                  | 835                                       | 1,744                               | 6,040                              | 102,244                  |
| 1944  | 213,688                                                    | 56,977                               | - 4,912                                                                                                                | - 809                                            | 5,706                                 | 1,069                                | 671                                       | 1,823                               | 2,313                              | 111,550                  |
| 1945  | 215,210                                                    | 48,534                               | - 2,908                                                                                                                | - 746                                            | 7,545                                 | 1,754                                | 800                                       | 2,716                               | 2,092                              | 123,079                  |
| 1946  | 212,613                                                    | 29,287                               | + 5,133                                                                                                                | 6,711                                            | 12,486                                | 4,363                                | 3,395                                     | 8,253                               | 2,211                              | 147,758                  |
| 1947  | 235,697                                                    | 25,819                               | + 8,856                                                                                                                | 71                                               | 17,207                                | 5,118                                | 5,510                                     | 11,179                              | 3,145                              | 166,940                  |
| 1948  | 262,434                                                    | 38,509                               | + 11,323                                                                                                               | 6,455                                            | 20,661                                | 6,151                                | 7,498                                     | 4,563                               | 4,212                              | 177,383                  |
| 1949  | 255,578                                                    | 36,872                               | + 6,914                                                                                                                | - 3,713                                          | 19,473                                | 5,986                                | 8,911                                     | 16,204                              | 6,390                              | 178,832                  |

\* Source: Same as Table 17, with the additional use of the National Income Issues of the Survey of Current Business (July, 1949 and 1950).

† Series after 1942 revised.

a long-overdue need for replacement merely to meet current output but, even so, we must reckon the sharp decline in the rate of disinvestment as a sign of a revival of expectations among businessmen. Also contributing to the revival was the sharp upswing in residential construction. The index of contract values awarded rose to the highest value it had reached since 1929. Part of this must also be reckoned as a pickup in long postponed replacement and renovation, while the remainder was also the product of overdue housing to provide for the shelter needs of a population that had continued to grow during the thirties.

We have referred to actions taken by the monetary authorities. These took the form of a sharp reversal in policy by all concerned. The Federal Reserve System eased reserve requirements in the spring of 1938, and in two months excess reserves had risen 1 billion dollars. In the meantime, the Treasury had abandoned its gold sterilization program, and as gold began to flow in in steadily increasing amounts (representing, mostly, flights of capital from Europe), excess reserves continued to grow and bank indebtedness to the Federal Reserve steadily diminished. The result was a steady easing of the monetary situation. Simultaneously, the Administration quickly changed its mind about proper fiscal policy, and once more switched to a policy of unbalancing the budget, this time with no reluctance and with much gusto. At the end of 1938, although production and national income were well below the peaks of 1937, the recovery was definitely established.

After a brief setback in the first part of 1939, the upswing continued with renewed vigor. A large amount of impetus came from the continued deficit spending of the Federal Government. At the same time government military appropriations rapidly expanded in the latter part of 1939, although only small sums were actually spent in this year. Nevertheless, it is clear that the appropriations were enough to raise the marginal efficiency of capital. Lending additional stimulus to things was the speed with which Congress assured the belligerents access to American output. By the end of 1939 the monthly index of industrial production was back to its 1937 peaks.

Following, again, a brief setback in the early months of 1940,



the upswing took off with renewed and deadly earnest. Table 20 shows a big surge in investment in producers' durables plus a sharp rise in inventory investment (much of the latter must be recorded as consisting of the speculative variety in the face of the growing imminence and eventual outbreak of war). The rise in investment in producers' durables, plus the small rise in investment in building construction, carried domestic business net capital formation (exclusive of inventory changes) into positive figures for the first time since 1929. By the end of 1940, all production indexes had reached and surpassed all previous peaks. The economy was gradually approaching full employment levels, with slight bottlenecks beginning to make their appearance.

### *The Growth in Liquidity and the War*

Until late in 1941, the price level exhibited truly amazing stability. Table 21 shows a rise in the money supply of over 30 per

**Table 21 Behavior of Money and Prices, 1938-1949**

| Year | (1)<br>Money Supply<br>( $M + M'$ ) | (2)<br>Gross<br>National<br>Product | (3)<br>Income Velocity<br>$2 \div 1$ | (4)<br>Cost-of-<br>Living<br>Index<br>1935-1939 = 100 |
|------|-------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------------------------|
| 1938 | 30.3                                | 84.68                               | 2.79                                 | 101                                                   |
| 1939 | 34.2                                | 90.43                               | 2.64                                 | 99                                                    |
| 1940 | 39.5                                | 100.48                              | 2.54                                 | 100                                                   |
| 1941 | 46.3                                | 125.29                              | 2.71                                 | 105                                                   |
| 1942 | 54.6                                | 161.55                              | 2.96                                 | 117                                                   |
| 1943 | 79.9                                | 194.34                              | 2.43                                 | 124                                                   |
| 1944 | 100.5                               | 213.69                              | 2.13                                 | 126                                                   |
| 1945 | 118.5                               | 215.21                              | 1.82                                 | 128                                                   |
| 1946 | 119.4                               | 212.61                              | 1.78                                 | 139                                                   |
| 1947 | 109.8                               | 235.70                              | 2.15                                 | 159                                                   |
| 1948 | 110.5                               | 262.43                              | 2.37                                 | 171                                                   |
| 1949 | 111.8                               | 255.58                              | 2.29                                 | 169                                                   |

cent, while gross national product rose but 19 per cent. Despite this disparity in the rates of growth in these two variables, the cost-of-living index actually fell a point. A look at the figures for income velocity shows a 9 per cent drop in this variable. The picture is clear. The tremendous increase in the money supply had gone into idle cash balances to a large extent. In spite of the excel-

lent prospects for the future, both from the business and employment viewpoints, apparently people could not readily wrest themselves away from the drives for liquidity which had overwhelmed them during the Great Depression.

The big factor in the expansion of the money supply was the enormous inflows of gold in the years under consideration. This factor accounts mainly for the great increase in the money supply. But as we have just noted, this increase served to raise primarily the liquid asset position of the bank and nonbank public alike. Bank excess reserves rose 5.3 billion dollars between the beginning of 1938 and the middle of 1940. The nonbank public's total cash asset position rose something like 10 billion dollars in the three-year period ending in 1940.

Lending its support to the extreme monetary ease was the Federal Reserve System. Early in 1937, the Federal Reserve had adopted the policy of "maintaining orderly conditions in the money market" for government securities of all maturities. Thus when there was the usual "war scare" at the outbreak of the war in the fall of 1939, the System purchased almost 0.5 billion dollars of governments, until the crisis on the securities markets had passed. During this period the Reserve Banks also followed a policy of bringing downward pressure on the entire structure of interest rates. Before long virtually the entire structure was down to its lowest levels of the interwar period.

The situation clearly was filled with inflationary dynamite. The public was as liquid as could be. Not only was its cash position at unprecedented levels, but the Federal Reserve System was virtually guaranteeing the public against a decline in capital values; in fact, its policy bordered on one of assurance of gains through a rise in security prices. In addition, the banks were primed to lend to all comers, with the full support of the monetary authorities behind them. It was only a question of time before the public would shake itself free of its liquidity preferences and go on a spending spree.

By the end of 1940 it was apparent that this time had come. Price stability came to an end. Corporate profits had been running high, and labor felt itself compelled to demand wage increases.

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Given the booming prospects of the present and future, together with the growing shortages of labor (especially in manufacturing industry), management was not too reluctant to concede to these demands. But, of course, prices soon started to roll, and during 1941 the rise in prices was obviously assuming ominous proportions. Moreover, the liquidity position of bank and nonbank public alike, far from deteriorating, improved. The big reasons were the continued inflow of gold from abroad, the tremendous surge in government military spending, and Lend Lease.

Now it was only a matter of time before price, rationing, and allocation controls would be necessary. These came, promptly enough, in the winter of 1942. They came not only as a result of past accumulation of liquidity which was now threatening to let itself loose on the economy. They came also, perhaps primarily, because of the continued astronomical rate of expansion in the money supply and *very* easy money policy adopted by the monetary authorities. For a variety of reasons, some sound, others less so, Congress and the Administration found it difficult to raise taxes. Although they were raised, they were hardly raised enough. And even though intense efforts were made to persuade the nonbank public to buy War Bonds, these purchases were sadly insufficient, too. Since no government in wartime can tolerate any hampering of the war effort by a shortage of funds, the only recourse was the banking system. At the same time, the Federal Reserve System, to keep the interest costs on the rising debt low and to encourage the banks to let go of their vast hoards of excess reserves, adopted its now famous price support program in the bond markets, which enabled government securities to acquire a liquidity comparable to that of cash.

As a result of all these factors, there developed what we have described earlier as an inflationary gap. That is, the enormous volume of government spending on the war resulted in a level of national money income far in excess of the full employment income. A number of individual savings inducements kept the situation from developing into a runaway inflation. Foremost among these were the rationing program and outright shortages of goods. Given a limited access to goods, people had little recourse but to save.

Happily, however, households on a wide scale also developed the habit of accumulating liquid assets in anticipation of being able to purchase goods much more readily in the postwar period. This latter factor is especially significant as an explanation of the comparative absence of black markets. In addition, the enormous increase in the labor supply, provided by women, the elderly segments of the population, and the extended work week, enabled the volume of consumer goods production to be maintained at amazingly high rates. As a result, although there was a considerable amount of saving, a majority of consumers probably found their living standards higher than they had been all during the thirties. This made saving all the easier. Of course, we cannot omit the various savings plans and the patriotic inducements to enlist in bond purchase programs, nor can we leave out the high level of taxes, all of which diverted current income from consumption outlets.

All the sources of savings developed during the war were just what the doctor ordered for purposes of war finance, so long as the government was financing the war primarily by borrowing from the commercial banks. But the doctor was bound to be confronted with a bad case of inflationary fever in the postwar period. The economy came out of the war with an accumulation of liquid assets that was without parallel in financial history. There may have been greater expansions in the money supply in other periods of the past, but these had been rapidly spent on inflationary price movements. This time an overwhelming expansion in the money supply had occurred which was stored up for the years of plenty.

The increase in the liquid asset holdings of individuals and businesses between the end of 1939 and the end of 1945 is fantastic. The total value of such holdings rose from 69 billion dollars in December, 1939 to 227.5 billion dollars by December, 1945, an increase of 231 per cent. In the same period the volume of currency in circulation advanced from 5.8 billion to 25.5 billion dollars, demand deposits went from 20.9 billion to 60.2 billion dollars, and U.S. Government securities jumped from 12 billion to 86.9 billion dollars.<sup>8</sup> The importance of these figures is further emphasized by

<sup>8</sup> *The Federal Reserve Bulletin* (August, 1950), p. 967. In this issue the *Bulletin* presents a breakdown of the distribution of liquid asset holdings be-

the comparatively narrow limits within which price movements were held during the war period, so that most of this increase in liquidity was "real." Moreover, many people in low-income (high marginal spending) brackets were holding liquid assets virtually for the first time. And the "support" policies of the Federal Reserve System made government securities virtually as liquid as cash.

### *The Postwar Boom*

As was to be expected, there was a slight letdown in economic activity following the end of the war, pending reconversion. But reconversion proved surprisingly brief; unemployment was held to a minimum, keeping within the upper limit of 3 million workers during the period of reconversion and demobilization. By late winter of 1946, output of all types of manufactures (durable and non-durable) was well along the path of expansion. The picture of postwar expansion is clearly recorded in Table 20. Private domestic capital formation rose to all time highs. Production of producer durables, business construction, residential construction, investment in inventories—all set new records.

The reasons for this are almost too self-evident to be pointed out. First of all, there was the tremendous accumulation of replacement, not only from the war period, but also from the depression of the thirties. There was a long overdue need for expansion. There was an accumulation of technical improvements waiting to be incorporated into the processes of production. There was the tremendous surge in population during the war to lend additional impetus to residential construction as well as to business in general. The enormous backlog of deferred consumer demand provided business with a further spur to investment. And, finally, the vast accumulation of liquid assets of business itself enabled it to finance its programs of investment with a minimum of difficulty.

Of course, the expansion was not confined to business investment. Households, with their pent-up deferred demand and their vast accumulation of liquid assets, went wild. The consumption function literally rocketed upwards, as a glance at the consumption

tween business groups and individuals on an annual basis between December, 1939 and December, 1949.

columns in Table 21 will reveal. During 1946 the average propensity to consume, according to our rough figures, jumped 13 per cent. A race began for consumer durables, the production of which established new records in each year until the recession of 1949. Much of this rush into consumer durables must be taken to be the product of accumulated replacement carried over, like that of business plant and equipment, from the years of depression and war. In addition, the extremely high personal incomes, the accumulation of liquid assets, and, to be sure, the great expansion of consumer credit which occurred (total consumer credit increased some 9.5 billion dollars between 1945 and 1949), all enabled new groups to acquire possession of many consumer durables for the first time.

Adding to the forces of expansion in the postwar years was the enormous level of exports balances in the merchandise foreign trade accounts. For the years 1946, 1947, 1948, and 1949, the export volumes read as follows: 11.8 billion dollars, 16.0 billion dollars, 13.5 billion dollars, and 11.8 billion dollars. Even though they fell after 1947, the high level exports were an important factor during the post-war expansion. Of course, the big factor in the extraordinary demand for American products was the devastating damage to European industry brought about by the war, plus the willingness of the U.S. Federal Government to grant extensive loans.

Meanwhile, if there was any possibility of a tightening of credit conditions, monetary policy saw to it that no such thing would happen. The Federal Reserve System, under pressure from the Treasury, continued its policy of maintaining government security prices, so that government securities were as good as cash (in fact, better, because they earned interest) to the bank and non-bank public. Thus any time the banks found themselves growing short of reserves, they simply unloaded government securities on the Federal Reserve System at the pegged prices. While some restrictive measures were taken, such as the removal of the "peg" on short term governments in July 1947, the reduction of support prices in December 1947, the raising of rediscount rates, and a program of debt retirement (about 26 billion dollars through mid-1948) by means of Federal budget surpluses, the basic policy of freezing long-term interest rates, at least, nullified the effect of much of

these actions. Thus within a year after the support prices on Treasury bonds were lowered, the Federal Reserve was compelled (by its continued support policies) to acquire some 11 billion dollars in bonds from banks and other investors. The reason for this does not concern us at this point; what does was the demonstrated ability of the bank and non-bank public to exercise an extraordinary degree of control over bank reserves and the money supply in general. Even with the vast accumulation of liquid assets, the 16 billion dollar expansion in commercial bank loans in the three year period ending December 1948 gives strong indication that business firms and households were still in need of credit to finance the acquisition of durable goods.

The main factors in the postwar boom, then, appear to have been (1) a tremendous surge in autonomous investment, business and residential, spurred by a huge accumulation of technological improvements and the need to provide for a spurting population; (2) an extremely high rate of induced investment in business plant and equipment and inventories, receiving a powerful impetus from the tremendous backlog of replacement demand for plant and equipment and the enormous amount of deferred demand for consumer goods (particularly consumer durables), with the latter, in turn, being maintained by high consumer incomes, the great accumulations of liquid assets, and the ease of obtaining consumer credit; (3) the huge exports in the merchandise foreign trade balance; and (4) the extremely elastic supply of credit maintained by the price support policies of the Federal Reserve System.

One thing that impresses the present writer is the lack of new manufacturing industries leading the way in the postwar expansion. Between the end of the war and the middle of the third quarter of 1949, when the television industry underwent a tremendous expansion, there appears to have been no new or comparatively new manufacturing industry with outlets for autonomous investment on a scale comparable to the investment ramifications arising out of the automobile industry in the twenties. Looking over the leaders in industrial output, one sees much the same industries leading the way. True, there was a tremendous expansion in consumer durables, and many of these, like washing machines and home freezers,

might be classed as new (in terms of the great increase in the number of new users). But, on the whole, the great demand for most consumer durables seems to have been the product of a vast accumulation of wartime savings and the postwar adoption of many of them into the category of household necessities, plus the great accumulation of deferred demand carried over from the war period and beyond. The latter accumulation must be taken to represent, in large measure, a deferred replacement demand, deferred either because of cyclically low incomes in the thirties or because of limited production during the war period. Thus we may say that the vast purchases of consumer durables, including automobiles, represent, in the main, (1) the efforts to make up for long deferred replacement, and (2) the normal long run rise in the living standards of the nation, the latter taking the form of a secular upward shift in the short run consumption function.

The significance of the foregoing is that, except for residential, and perhaps public utility construction, there appears to have been a lack of autonomous investment, particularly the type emanating from some great innovation(s). On the contrary, if the above analysis is correct, a distressing amount of investment appears to have been of the "*induced*" variety, signifying that it will tend to *depend* on (that is, be functionally related to) the level of national income, instead of being independent of and *leading* the latter. This would bode ill for the future. Unfortunately, it is too early and difficult to attempt to corroborate such a thesis. The most important obstacle to corroboration is the extremely high level of government spending. With its great emphasis on military outlays and foreign aid, government spending has, of course, been autonomous, too. It is extremely difficult to tell what the behavior of the economy would be (or would have been) without these abnormal government peacetime activities, but there are some interesting questions to be raised in this connection.

### ***The Inventory Recession of 1948-1949***

The major upswing which began in late 1945 and early 1946 was interrupted in the late Fall of 1948 by a minor recession, which was primarily an inventory recession. That the decline in national in-



come was dominated by the behavior of investment in inventories is revealed by the figures in Table 20. Column 4 shows a radical change in this form of investment from a positive value of 6.5 billion dollars in 1948 to a negative value of -3.7 billion dollars in 1949. Such an extreme change in this form of investment was bound to exert a deflationary influence which would show up in gross national product figures. In some contrast, 1949 gross private investment in producer durables and building construction fell but 1.4 billion dollars below its 1948 rate, reflecting, in part, the gradual completion of war-deferred investment programs in new and expanded plant and equipment. Some of this decline in fixed investment undoubtedly also reflected the effects of declining sales and reduced profit expectations during the recession. Thus the decline in total gross investment appears to have been comprised largely of a decline in induced investment.

The recession began in the Fall of 1948. Widespread cutbacks of new orders began in October and continued at an accelerated rate until February 1949. In November the Federal Reserve index of total industrial production began a decline which continued uninterrupted through to (and including) July of the following year; all together the decline in this index amounted to 34 points. Department store sales fell 22 per cent in the same period, although these never regained their 1948 levels until the outbreak of the Korean war. The wholesale prices and cost-of-living indexes fell 12 and 5 points respectively; these, however, continued to fall slightly for about six months after the recession ended. Unemployment increased from the base minimum of about 2 million workers to a figure which approximated 3.5 million; this was about 5.5 per cent of the labor force. Hourly wages, however, not only did not fall, but rose slightly, real hourly wages in manufacturing industry rising some 2.6 cents during the recession.

The decline in production was led, as usual, by producer and consumer durables. Declines in production of producer durables ranged from 14 per cent to over 25 per cent. A notable exception to these declines was electrical machinery, indicating that the electricity industry was still fulfilling its role of the twenties and thirties and still providing an important channel of autonomous

investment. [As a matter of fact, in the four year period 1946-1949, the public utilities (including the railroads) spent 10.4 billion dollars on construction alone, a sum which was almost 50 per cent of the amount spent on all domestic business construction.] Contractions in the production of consumer durables ranged from 7 per cent to 35 per cent, with the affected industries being those dealing in household appliances. The principal exceptions in the consumer durables categories were the automobile and television industries, the latter just coming into its own in 1949. The declines in production of household appliances reflected mostly the catching up with backlog demands, but, to a certain extent, may also have been the product of a fall in the demand for consumer durables following the reimposition of consumer credit controls in the Fall of 1948. The declines in the prices of these various durables also reflected a growing dependence on sales to newcomers, an increasing dependence on current income.

The origins of the recession were threefold. There was a policy of monetary restriction carried out by the Treasury and the Federal Reserve System, a sharp and abrupt decline in the country's merchandise export trade balance, and a decline in the ratio of consumption to national income (which we have taken as a rough measure of the average propensity to consume), accompanied by a sharp decline in the rate of growth of consumption.

A close follower of Mr. Hawtrey's theories might be tempted to point to the development of certain restrictive monetary and fiscal policies as the source of the contraction. Certainly, there was a strong coincidence of timing between the beginning of the recession and the attempts to tighten credit conditions on the part of the Federal Reserve System and the Treasury. The latter utilized an 8 billion dollar cash surplus largely to retire 8 billion dollars of marketable debt, the bulk of the retirement occurring in the first quarter of the year; some 70 per cent of the amount retired was held by the Federal Reserve System. Rates on Treasury bills went up from 1 per cent to 1.38 per cent; those on certificates rose from 1.13 per cent to 1.25 per cent.

In February and June of 1948, reserve requirements for member banks in New York and Chicago were raised 2 percentage points.

Again, in September reserve requirements on all member banks were raised another 2 percentage points. The first actions increased reserve requirements about 1 billion dollars, forcing the banks to sell government securities to the Federal Reserve in order to acquire additional reserves. The second series of actions, however, was designed to *offset* an increase in bank reserves deriving from an inflow of gold of 1 billion dollars (between February and October) and sales of government securities to the Federal Reserve System by non-bank holders of governments. Rediscount rates at the Reserve Banks were raised .25 per cent in January and again by the same amount in August, at which time they stood at 1.50 per cent.

The net effect of these actions was a reduction in the liquidity position of the banks. But the reduction in liquidity took the form, primarily, of a reduction in the volume of government securities held by the banks, a decline which totalled about 6.5 billion dollars. Excess cash reserves actually rose 200 million dollars. Rediscounts and advances at the Federal Reserve banks rose 74 million dollars between June and October. The evidence indicates that the banks were not placed under too much pressure, as may be seen in the fractional rises in borrowing costs at the banks. Between March and December customer rates rose but .18 per cent in New York City and an average of slightly less than .30 per cent elsewhere in the country. Open market rates on prime paper rose between .13 per cent and .25 per cent. Moody's average yields for all corporate securities went from a low of 3.00 per cent in June to a high of 3.12 per cent in November. Aaa's rose from a low of 2.76 per cent in June to a high of 2.84 per cent in November, Aa's from a low of 2.85 to a high of 2.94 between June and October, and Baa's from a low of 3.34 in June to a high of 3.53 in November.

Small increases in the structure of interest rates like the foregoing can hardly have had much effect on the demand for loanable funds, unless there was a fall in the marginal efficiency of capital from its high levels of previous years. This would seem to be borne out by the rise in yields on long-term corporate securities in 1947, without any visible effect on corporate investment. Between July and November of 1947, Moody's average of yields on all grades of corporate bonds rose from 2.80 per cent to 3.02 per cent; similarly,

the yields of corporate stocks rose from 4.9 per cent to 5.4 per cent. Thus the costs of long-term borrowed funds rose 8 per cent, while the costs of equity funds may be said to have risen roughly 10 per cent. These latter figures contrast with a rise of 4 per cent and 11 per cent respectively in 1948. Because business expectations were buoyant in 1947, the rise in the costs of long-term money had no effect on corporate investment. But because something must have happened to damp these expectations in 1948, the demand for loanable funds fell off. What did happen to impair the marginal efficiency of investment (particularly in inventories) we shall discuss in later paragraphs.

Nor do the banks appear to have displayed much reluctance to lend. While the rate of expansion of bank loans in the second half of 1948 was less than that of 1947, there were still sizable expansions in loans in August, September, and October—the critical months of the year. In these three months commercial, industrial, and agricultural loans increased about 400 million dollars, 250 million dollars, and 200 million dollars, respectively. Moreover, it is, again, impossible to tell how much of the difference in the rate of increase in loans in 1947 and 1948 (total loans at commercial banks increased 6.9 billion dollars in the former year, compared with a 4.4 billion dollar increase in the latter) was due to a growing inelasticity in the supply conditions of credit and how much of it was the product of a shrinking demand for bank credit which had its origins in other changes occurring in the economy. For example, there was the decline in the marginal efficiency of investment in inventories. In addition, a substantial amount of investment funds was obtained from non-bank lenders. Very large loans were made from insurance companies, mutual savings banks, and savings and loan associations, all of whom made loans whose combined total was about 9 billion dollars during the year ending October 1948. Moreover, business resorted to increased internal financing out of record high profits. Thus in the face of record profits, dividends were 10 per cent and 13 per cent less in the second and third quarters of 1948 than they had been in the corresponding quarters of the previous year.

Certainly, if the smallness of the increases in short-term interest rates means anything at all, it does not reveal a sharp stiffening of

attitudes on the part of commercial banks. Earlier in the year these banks had shown little hesitancy in unloading government securities on the Federal Reserve System in order to expand their loans to the private sector of the economy, even though they had raised loan rates somewhat. But although they received a substantial volume of new reserves in October as a result of continued Federal Reserve purchases of government securities from non-bank investors, these funds were used to rebuild the banks' holdings of short-term governments. It is straining the imagination a bit too much to suggest that the small increases in short-term rates were responsible for the decline in the demand for bank funds.

However, it would be unwise to impute no responsibility at all for the recession to the restrictive policies of the monetary authorities. When banks find it necessary to sell government securities in order to offset a drain on cash reserves resulting from debt retirement with budget cash surpluses or to meet an increase in reserve requirements, their liquidity is reduced, and they are likely to be somewhat less willing to sell more of such securities in order to expand their loans to business. The reason is that government securities are much in the nature of excess reserves, so long as they can be readily sold without fear of capital loss; the latter was possible then because of the market support policies of the Federal Reserve System. Hence we may say that because the policies we have described all served to effect a reduction in bank holdings of governments, they acted to reduce, to a certain extent, the potential lending power of the commercial banks.

Perhaps the most important restrictive action the Federal Reserve undertook was the revival of consumer credit controls, which had been allowed to expire in November 1947. These controls were revived in September 1948. Prior to this month bank loans to consumers had been expanding at the rate of approximately 80 million dollars a month. After September, however, this type of bank lending abruptly ceased. Simultaneously, sales of consumer durables, which had been setting records during the first three quarters of the year, suddenly began lagging at an alarming rate. There can be little doubt that the abrupt change in the volume of consumer loans by banks and the sudden lagging tendencies of sales of

consumer durables reflected to a large extent the reimposition of consumer credit controls by the Federal Reserve System.

However, it would be inaccurate to ascribe sole responsibility to consumer credit controls for the decline in consumer durable sales. Undoubtedly sharing to some extent in the responsibility for this turn of events were factors which were responsible for the decline in the rate of advance of sales of non-durable consumer goods earlier in the year. These factors include such things as a decline in the savings and liquid asset position of consumers, the catching up with deferred demand, and an increasingly easy supply situation. Where backlog demand continued strong, as in automobiles, there seems to have been no decline in the rate of advance of installment sale credit. Thus automobile installment sale credit increased approximately the same amount during the month of October in 1948 as it had in the same month a year earlier.

Much more important as an explanation of the recession, in the opinion of the present writer, was the 2.5 billion dollar decline in the volume of merchandise export trade which occurred in 1948. The decline set in at the very start of the year. That it provided a sharp jolt to the domestic economy of the U.S. will be realized when note is taken of the fact that the year before had seen a 4.2 billion dollar *increase* in the merchandise export trade. The reasons for the reductions are to be found in the rapid strides toward recovery Europe began to make under assistance from the Marshall Plan and by dint of good hard work at home. Part of the explanation also lies in the difficulties many European countries were having in obtaining dollar exchange; moreover, what exchange they did get was subject to rapid depreciation in purchasing power by the price inflation in process in the U.S. Because of the relatively minor role that foreign trade plays in the gross national product of the U.S., care must be taken not to exaggerate the importance of the decline in the export trade as a factor inducing the recession. Nevertheless, in the presence of other deflationary influences during 1948, there is little doubt that the sharp change in the direction of the movement of the nation's export volume exerted a damping (though short run) influence on businessmen's expectations.

The most important explanation of the recession is, in the author's opinion, an underconsumptionist one. The support for this view is to be found in Table 22. In 1948 gross national product rose some

*Table 22 Consumption and Investment, 1938-1949*

| Year                     | Net Changes<br>in<br>Business<br>Inventories | Net Business<br>Capital<br>Formation (Ex-<br>clusive of Net Changes<br>in Business<br>Inventories) | Rate of Growth<br>of<br>Consumption | Consumption<br>as Percentage<br>of G.N.P. |
|--------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------|
| (in millions of dollars) |                                              |                                                                                                    |                                     |                                           |
| 1938                     | - 973                                        | - 2,741                                                                                            | -.04                                | .76                                       |
| 1939                     | 441                                          | - 2,179                                                                                            | .05                                 | .74                                       |
| 1940                     | 2,275                                        | - 646                                                                                              | .07                                 | .71                                       |
| 1941                     | 3,874                                        | + 615                                                                                              | .14                                 | .65                                       |
| 1942                     | 2,065                                        | - 3,506                                                                                            | .11                                 | .56                                       |
| 1943                     | - 922                                        | - 5,534                                                                                            | .12                                 | .53                                       |
| 1944                     | - 809                                        | - 4,912                                                                                            | .09                                 | .52                                       |
| 1945                     | - 746                                        | - 2,908                                                                                            | .10                                 | .57                                       |
| 1946                     | 6,711                                        | + 5,133                                                                                            | .19                                 | .70                                       |
| 1947                     | 71                                           | + 8,856                                                                                            | .13                                 | .71                                       |
| 1948                     | 6,455                                        | + 11,323                                                                                           | .07                                 | .68                                       |
| 1949                     | - 3,713                                      | + 6,914                                                                                            | .008                                | .70                                       |

27 billion dollars over its level of the previous year. Yet our figures show that the average propensity to consume fell 3 percentage points. This fact may be taken as an indication of a downward drift in the position of the short-run consumption function from its immediate postwar peaks. At the same time the rate of growth of consumption fell 6 percentage points. The latter figure is especially significant, for it took place independently of the movement in national income, the fall in the rate of growth of consumption occurring in the face of a steady growth rate in national income. The result was a sharp rise in the rate of inventory accumulation, and mostly on an *involuntary* basis. There can be little doubt that the great amount of inventory investment recorded for 1948 was of the unplanned variety, particularly in the late months of the year. The reason, of course, was the levelling of consumer demand. As early as January 1949, the *Survey of Current Business* (of the Department of Commerce) saw fit to devote considerable space to a discussion of the change in the rate of consumer spending, to note carefully

the sagging tendencies in retail trade, particularly in the last quarter of 1948. Where sales of non-durable consumer goods had shown a marked decline in their rate of increase all during the year, in the last quarter the trend also began to affect noticeably consumer purchases of consumer durables (except automobiles). A marked shift in the composition of inventories in favor of finished commodities was noted. A greater than seasonal drop in retailers' orders to manufacturers was also important enough to deserve special mention. All these factors bear out our figures on consumption in Table 22.

An interesting question arises at this point. The figures in Table 22 show that the rate of growth of consumption declined by 6 percentage points in 1947, also. Why, then, did not a recession occur in this year? The answer to this query is not difficult to find and affords an interesting insight into the nature of inventory investment. It is clear that the accumulation of inventories is not always deflationary; it depends on whether such investment is of the planned or unplanned variety. It depends also on the state of the ratio of inventories to monthly sales; if this ratio is well below the figure which businessmen are accustomed to maintain, even unlooked-for inventory accumulation will not necessarily be deflationary. One indication of the situation in 1947 and 1948 may be gleaned from an examination of the ratios of inventories to monthly sales in the prewar and postwar years. The average for the ratio of total retail inventories to total retail sales during the month of October in the prewar years was about 1.55; in October 1948 this ratio was 1.37, an increase of 16 per cent over its value during October 1947, but apparently still significantly less in value than its prewar figure. The ratio of *total* inventories to *total* sales, however, does not give too accurate a picture of the behavior of consumer outlays and inventory accumulation during 1948. The reason for this is that it is considerably influenced by consumer durables, the sales of which held up quite well during most of 1948—until the imposition of consumer credit controls. In fact, durable goods sales increased some 20 per cent during 1948 and constituted over half the increase in consumer expenditures in this year.

On this account, it seems better to compare the ratio of non-



durable inventories to non-durable sales in the prewar and postwar periods. In the month of October in prewar years, the value of this ratio for retailers averaged about 1.36; its value in October 1948 was 1.25, an increase of some 17 per cent over its value of October 1947. The value of the same ratio for wholesalers reached a value of 1.08 in October 1948, compared with an average of 1.01 for this month in the prewar period. Thus it is clear that by October 1948, ratios of inventories to monthly sales in soft goods had risen to values closely approximating their prewar figures. Undoubtedly adding to the discomfiture of businessmen, and, it is not unreasonable to assume, being responsible for a certain amount of unplanned inventory accumulation, was the sharp fall in the rate of increase of retail sales of non-durable consumer goods in the crucial third quarter of 1948. For the year as a whole, such sales increased some 6 per cent above their dollar values of the year before. But whereas their average quarterly *rate* of increase in 1947 approximated 3 per cent, this figure dropped to less than 1.5 per cent in 1948. During the third quarter of 1948 the rate of change of retail sales of non-durables fell from a positive figure of 2 per cent to a negative one of  $-0.5$  per cent.

Thus it is clear why the 6 per cent decline in the rate of growth of consumption in 1947 did not precipitate a recession in this year, but did so in 1948. The decline in this **variable** in the former year permitted businessmen to build up their inventories to a level which approximated their normal relationships to monthly sales. By the middle of 1948, this had been pretty much accomplished. Hence with the continued decline in the rate of growth of consumption finally culminating in an actual change in the direction of the movement of retail (non-durable) sales, resulting in a fall in their absolute volume, there was good cause for alarm and possible retrenchment, at least in inventory investment. To these remarks should be added those made earlier in connection with the effects of consumer credit controls. It is not unreasonable to suppose that businessmen became additionally fearful that the reimposition of these controls would add to the downward movements in retail sales that had set in earlier in the year, as, in fact, they did.

It might further be noted that we are not laying *sole* responsi-

bility for the recession at the feet of the apparent decline in the consumption function and the rate of growth of consumption. There were also the sharp fall in the export trade volume and the policy of monetary restriction discussed earlier. There can be little doubt that their appearance at a time when consumption was exerting deflationary pressures certainly added to these effects in a significant manner. The reasons for assigning relatively more importance to the behavior of consumer spending may be put in the following way. On the one hand, it must be admitted that had the patterns of consumer spending we have described occurred in the absence of the other two factors, the recession would probably have been less severe; but one would still have occurred (in the manner, perhaps, of the recession of 1927). On the other hand, the chances of a recession taking place based on the other two factors alone, and in the face of a continued rate of growth of consumption like that of 1946, are extremely problematical, to say the least.

The reasons for the decline in the consumption function and the rate of growth of consumption are not hard to find. In the first place, it is clear that the backlog of consumer demand was rapidly being filled by the end of 1948. At the same time, the 43 per cent rise in the cost of living index had played havoc with the accumulation of wartime savings. These had become rapidly exhausted by the end of 1948. The combined effect of these two developments was undoubtedly a drop in the position of the consumption function from its abnormally high postwar levels. People were now regulating their consumption expenditures more closely in accord with their current incomes now that their wartime savings were gone. And they were able to do this without discomfort, because their most pressing needs had been satisfied in the preceding years. The result was that even though consumer disposable income continued to rise well above its levels of 1947 (because of reduced personal income taxes, state veterans' bonuses, and higher wage and salary payments), the rate of increase of consumer outlays fell sharply.

If, now, the question is asked, why didn't a major downswing develop out of this inventory recession, the answer, as usual, lies

in a strong and increasing rate of autonomous investment, with an extraordinary amount of stimulus being provided by expanded government (deficit) spending. In the private sectors of the economy, the principal sources of stimulus were provided by the residential construction and automobile industries.

During 1948 and 1949 the residential construction industry underwent a tremendous expansion, just as it had in the postwar period following World War I. The shortage of housing was, of course, extreme, and the demand for housing was given further impetus by the very easy conditions of real estate credit, particularly in the case of GI housing loans by the Federal Government. Even during the recession, the rent index continued to rise, giving further indication that the demand for housing continued unabated. The results are to be seen in Table 20. Where business construction declined in volume, residential construction rose 1.4 billion dollars. The importance of this is reflected for example in the continued high level of production of building machinery, while the production of most other producer durables was falling off.

In similar fashion, the production of automobiles continued to expand in the face of declines in all other consumer durables. This industry had been faced with bottleneck problems from the end of the war, mainly as a result of steel shortages. The result was that the backlog of demand for automobiles had still gone unsatisfied to a large extent by the end of 1948. In fact, the banner production of passenger cars in 1949 topped all previous records in the history of the automobile industry. Much of the demand for cars represented a long deferred replacement demand, as in the cases of producer durables and other consumer durables. In addition, however, it undoubtedly represented an important part of the secular rise in the short run consumption function, a symbol of the nation's adjustment to higher living standards. In the present writer's opinion it was these factors which gave the automobile industry the misleading appearance of being a source of autonomous investment. Nevertheless, this was and is not the case. Even the (secular) upward shift in the consumption function indicates nothing of the sort. It merely signifies the adoption of the automobile, more than ever, as an integral part of the American standard of

living. In the end, this will only mean a greater dependence than ever of the automobile industry on the level of national income. As a matter of fact, the extreme importance of this durable consumer goods industry in the modern economy will only add to the latter's instability.

Finally, there was a sharp expansion in government spending in 1949, which was equal to (perhaps greater than) the importance of the above factors as a source of stability during the recession. Evidence of this is the 2 billion dollar rise in public construction in 1949. Much of this was the product of long deferred replacement repairs by all levels of government, who had postponed such projects during the period of inflationary price movements in the postwar years. Most of the stabilizing influence came from the Federal Government. The national debt rose some 4 billion dollars in the course of 1949, as Federal outlays increased in the face of (cyclically) declining Federal revenues. The most significant aspect of this was the 6.6 billion dollar rise in Federal outlays over the levels of 1948. Chief among the reasons for the expansion in Federal spending were increased military spending, a great expansion of foreign aid in connection with the European Recovery Program, and agricultural price support activities. There was also an expansion of 2 billion dollars in the volume of total purchases by state and local governments. Bearing out the figures on public construction in Table 20, a breakdown of state and local expenditures shows that the bulk of these increased expenditures went into a growing volume of school, highway, and other construction. The size of the increase in Federal expenditures and those of other levels of government, and particularly, the size of the cash deficit of the former, create strong grounds for ranking government spending, at the very least, on a par with the aforementioned factors as a stabilizing autonomous investment influence.

Acting somewhat as a weak adjunct to the greater spending of government, the Federal Reserve System reversed its policy of monetary restriction invoked in the early months of 1948. While no effort was made to lower discount rates at the Reserve Banks, a substantial effort was made in the direction of monetary ease by lowering reserve requirements during 1949. Between May 1 and

September 1 reserve requirements at all member banks were reduced 4 percentage points, releasing a total of 3.8 billion dollars of reserves; by August 1, at which time the index of total industrial production turned upwards, reserve requirements had been reduced 2 percentage points. The bulk of these increased reserves was used by the banks to increase their holdings of government securities, however. The consequent effect on bank reserves at a time when the availability of credit should have been increased induced the Federal Reserve, at the end of June, to cease making governments available to the open market and let the demand for such securities be reflected in a fall in their yields. But the sharpness of the fall in the latter soon prompted a renewal of open market sales by the Reserve Banks, although at a vastly reduced rate compared with that of the first half of the year. Thus there was no open market purchase program by the monetary authorities nor any reduction in rediscount rates, simply a reduction in reserve requirements. Nevertheless, the moderate decline in yields on government securities that occurred had the effect of making such securities a somewhat less attractive alternative to business and other loans, and, together with the overall increase in liquidity of the banks, was undoubtedly conducive to more lenient lending policies by the banks. Average rates on short term commercial loans reflected this a bit by declining from a peak of 2.74 per cent (reached in June) to 2.63 per cent during the third quarter of the year and remaining approximately at this level for the remainder of the year. Open market rates on prime paper also fell fractionally from 1.19 per cent to 1.06 per cent on July 5.

There was an expansion of business loans of about 1.0 billion dollars in the last five months of the year. However, it would appear quite definite, from the tiny reduction in the structure of short-term interest rates, that this expansion was largely the product of an increase in the demand for funds arising independently of the policy of monetary ease. It should be admitted, though, that the overall increase in the liquidity of banks' portfolios probably enabled the banks to facilitate, to some extent, the expansion in production that began in August. In addition, the re-emergence of seasonal patterns in the volume of outstanding consumer install-

ment credit during the first two months of the year prompted the Federal Reserve to ease consumer credit restrictions, and at the end of June, these ceased altogether. The result was an immediate increase in the average monthly rate of expansion of total installment credit, certainly a salutary influence on the economy during its period of readjustment. All things considered, however, there is little doubt that the monetary factor must be assigned distinctly a passive role in an explanation of the resumption of the major upswing in business activity which began, with renewed vigor, in August 1949.

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See also *The Federal Reserve Annual Reports* for annual and monthly series of business indexes.

## CHAPTER 14

### **MONETARY POLICY AND THE BUSINESS CYCLE**

Attitudes and opinions regarding the proper public policy to be employed with respect to the business cycle are marked by extreme diversity. These divergent viewpoints, moreover, are to be found among professional and informed observers, as well as the uninformed, "amateur" groups. Broadly speaking, we may group these different points of view under three categories: (1) *laissez faire*, (2) contra-cyclical policy, and (3) public policy implied by stagnation theories. It is probably not unduly inaccurate to say that, among the informed, the first and last conceptions of proper public policy represent comparative minority viewpoints, with the bulk of professional opinion, at least, adhering to a contra-cyclical approach. However, if the various "employment acts" may be used as criteria, apparently the large body of world public opinion has now become committed to a positive contra-cyclical policy, too. While the present book is more or less committed to the latter type of policy also, we should briefly examine the nature of all three schools of thought, if for no other reason than to establish a sounder basis for adherence to the contra-cyclical approach.

#### **Laissez Faire as a Policy for Business Cycles**

Since the term *laissez faire* traditionally implies a "hands-off" type of government economic policy, it may seem odd to the reader that such an approach is called a policy. Yet if this approach is *consciously* undertaken, it represents as much a type of policy as **does one designed to reduce** the amplitude and intensity of the cycle. Most proponents of the *laissez-faire* viewpoint see something

necessary or beneficent about the business cycle, and it is these latter qualities which provide the basis for their support of such a viewpoint.

Some adherents of a *laissez-faire* policy defend their position on the grounds that depressions are necessary to rid the economy of marginal firms and other inefficiencies that invariably develop during the prosperities that precede slumps in business activity. Under the impetus of the easy credit conditions, high levels of aggregate demand, etc., that we normally associate with boom periods, many weak and inefficient firms make their appearance to partake of the profits of these booming prosperities. Periods of depression, then, act as cathartics, necessary to rid the economy of these marginal firms, and to induce the remaining firms to cleanse themselves of the inefficiencies that profit-induced laxity permits to develop during the prosperity periods.

It is perhaps superfluous to point out that the ability to withstand the tidal forces of major depressions is a direct function of financial resources and strength. It is also necessary to point out that financial strength and efficiency are not always partners in the conduct of business enterprise. Financial strength may ordinarily be associated with large size, in the sense of largeness of share, percentage-wise, of the market. Large firms are made financially strong not only through the accrual of large profits, but also because their names give them access to the capital market, short and long term, to an extent that smaller, less well-known firms are denied. This is extremely important in periods of slump, when capital rationing becomes particularly acute. Banks and nonbank lenders, with their extreme pessimism and caution, are wary of lending to firms whose share of the market is small and whose (absolute) profit and asset position probably is weak. Small firms, and *new* firms, whose credit position is either weak or as yet unestablished, are apt to find requests for credit and loans either denied outright, or else answered with prohibitive collateral requirements and exorbitant interest charges (usually the former). Low profit levels, on the other hand, deny these firms the means of financing themselves internally.

Inefficiency, too, has many sources. One of these is the well-known difficulties *new* firms invariably encounter in "growing up."



Many new firms make their appearance during upswings and prosperities, introducing new products and processes, who, given enough time, would become more or less permanent parts of the economy. But, because of the factors mentioned above, they often disappear under the strain and pressures of major depressions. Many large firms are often inefficient because they are too big for their managerial boots. Yet their dominant market position often provides them with large enough profits to save and build up their liquid asset position, etc., for the proverbial "rainy day." Small and new firms are, by these very characteristics, denied this possibility, and as we have noted, their smallness and newness deny them the recourse to the capital markets that their larger counterparts so easily maintain.

The obvious implications of the foregoing are that great depressions sweep *indiscriminately* from the economic scene all too many efficient as well as inefficient firms, who go under simply for lack of financial resources. Many large firms, on the other hand, survive *in spite of* their widespread inefficiencies, merely because of their financial strength. We cannot help repeating the analogy, used earlier, that reliance on depressions to eradicate inefficiencies smacks too much of burning down houses to roast pig. Moreover, these "efficiency" arguments overlook the fact that there is little so inefficient as the tremendous waste of resources and manpower that accompanies major depressions. All the inefficiencies stemming from poor allocation of resources, bad production techniques, etc., could hardly approach the estimated 300 billion dollars or so of production lost through the widespread unemployment of resources in the United States during the decade of the thirties.

Some view depressions as a means of dealing with monopolistic combinations. Thus it is *hoped* that the pressure forces of depression will drive members of monopolistic agreements to break them and adopt a series of competitive actions in an effort to recoup losses. Economic theory teaches us that when competing firms are large enough to create a significant degree of interdependence among the sales of these firms, so that changes in the prices of one firm clearly affect the sales of competitors, there is a strong *tendency to desist* from competitive price cutting. Under such con-

ditions, oligopoly, it is more likely that depressions will strengthen these practices because during such periods sales are particularly sensitive to price reductions of competitors, and retaliation is the expected reaction to such reductions. Since a sequence of events of this type usually leaves the profit position of all firms in a worsened condition, business firms tend to enter into closer, rather than looser, agreements, tacit or explicit, during periods of depression.

Even if depressions succeeded in loosening the bonds of monopolistic agreements, however, there is strong reason for believing that such results would serve to increase the intensity of downswings. To the extent that such agreements are the product of interdependent sales curves among competing large-scale enterprises, they serve to reduce the large element of uncertainty that always prevails in such circumstances. The destructive type of competition that would follow the breaking up of these combinations during periods of depression would add severely to the abiding uncertainty and pessimism that reign during such periods. We have noted earlier that there is no greater damper to investment than uncertainty about the results of investment. To add to the uncertainty of depressions in the manner indicated is to place a further damper on investment at a time when the economy can least afford it. At best, the resort to depressions as a mode of breaking up monopolistic combines is about as crude, blunt, and clumsy a device as can be imagined. If antitrust action is desired, there are certainly considerably less devastating means available; major depressions cannot be justified on these grounds.

Depressions have also been viewed as stimuli to new inventions. It is felt that the strains and stresses of depression cause businessmen to look for new techniques of production in an effort to reduce costs. It appears that such views mistake invention for innovation. In so far as major depressions are marked by gross inadequacies of investment projects, it is evident that whether or not inventions are stimulated (and even this is a doubtful thesis), they are not incorporated into investment projects. This, of course, is not surprising, in view of the analysis of the preceding chapters. Businessmen are ordinarily too preoccupied with retrenchment to

concern themselves much with incorporating new developments. While there is undoubtedly some tendency for business firms to attempt to rid themselves of wasteful inefficiencies, these are hardly worth the price that depressions demand. There are ordinarily enough stimuli to invention to make it border on the absurd to advocate depressions as an additional stimulus.

Many people feel that depressions serve to increase the efficiency and discipline of labor through the fear of loss of jobs. This viewpoint, however, is difficult to reconcile with the well-known increase in "featherbedding" tactics that develop during depressions. Such tactics are difficult to discern and deal with, particularly in the presence of the defensive support offered by trade unions. Featherbedding tactics are not an unnatural concomitant of the widespread unemployment that characterizes depressions. The imminent threat of unemployment, of working one's self out of a job, virtually constitutes an invitation to the worker to slow down, to try to spread the work over a longer period of time and ensure a longer period of employment. It would appear that the fear of unemployment is at least as much an inducement to featherbedding in some areas as it is to increased discipline in others.

Finally, we have groups who credit depressions with the role of correctors of the disequilibria that develop during the upswing and prosperity periods of business cycles. Horizontal maladjustments develop in the form of overinvestment in particular lines of production. Some prices rise to levels incompatible with others in the structure of *relative* prices. Costs rise excessively relative to selling prices. The debt structures of many firms get too far out of line with the equity portions of their financial structures. Depressions, it is averred, serve to reduce or wipe out these various untoward developments.

As in other cases, depressions are both very clumsy and often ineffective in such a role. For one thing, it too often happens that it is the selling prices which are reduced during depressions, rather than costs. Many prices that enter into costs are often inflexible during downswings; these include wage rates, interest rates, and selling prices of basic industries, whose market structures are chiefly of the oligopolistic variety. Hence we often find the wrong prices

reduced. Moreover, we have seen that the sharp monetary contraction that invariably accompanies large-scale, generalized attempts to reform financial structures in favor of more equity and less debt financing, often offsets completely and frustrates the achievement of the goals of debt reductions. And as we have noted earlier, the all-embracing sweep of depressions often swamps firms whose financial and production position is perfectly sound; too often, that is, the baby is thrown out with the water.

There are, finally, those who view anything but strict *laissez faire* as a dangerous infringement on the liberties of individuals. This point of view is, in the opinion of the writer, not only sadly out of date, but also highly dangerous. It is evident that we have come to a point in history where the bulk of the industrial and agrarian populations are no longer content to suffer idle years of helpless and demoralizing unemployment. Failure to recognize these new attitudes is political dynamite. Unless efforts are made to eradicate or at least greatly alleviate the intensity and duration of periods of slump, we are apt to find ourselves confronted with much more serious threats to our liberties than those allegedly offered by such devices as monetary and fiscal planning. It is evident that the modern, industrialized economic systems of the West are without any automatic steering mechanisms to assure a reasonable amount of stability, free of prolonged generalized unemployment. We are past the time when we can permit the economic system to proceed with its violent upswings and downswings without any government intervention whatever. The problem at present is to devise a system of economic planning which is consistent with such freedoms as freedom of occupational and consumer choice in the economic sphere, and free speech, ballot, etc., in the political sphere. Indirect controls of the type offered by fiscal and monetary policies, rather than the more direct type of controls exemplified by price and rationing controls, conform to this principle. The indirect approach is the type to be discussed in the present chapter and is the type of planning envisioned by those who advocate contra-cyclical policies as well as the bulk of those who are stagnationists.

**CONTRA-CYCLICAL POLICY**

Contra-cyclical policy has as its objective the manipulation of a nation's fiscal devices (the revenues and expenditures of government and the national debt) and monetary instruments in more or less a *compensatory* way, so as to reduce the amplitude, intensity, and duration of business cycles. Thus in periods of depression the government would raise its level of expenditures and reduce its taxes (or some variation of this theme) so that a budget deficit is obtained, with the difference presumably financed through (bank) borrowing. At the same time, discount rates would be lowered, open-market purchases engaged in, reserve ratios lowered, etc., all with a view to expanding the money supply by easing credit conditions. During periods of inflation, the budget would be manipulated with a budget *surplus* as the goal, bank-held debt would be retired with the surplus, and monetary instruments would be manipulated so as to achieve a tightening of credit conditions. In periods of prosperity without inflation, the budget would merely be balanced (assuming the prosperity did not depend on government spending), so as to contribute neither inflationary nor deflationary pressures to the economy. A mild expansion in the money supply might be permitted to allow for the normal growth in the economy.

Many advocates of contra-cyclical policy view the *capital expenditures* portions of governmental budgets as central to this sort of policy. It is felt that governments should plan in advance their public works programs, that is, develop a "shelf" of projects which may be drawn upon in times of slump and built up during times of prosperity. The principle behind such a program of public works is that, where possible, public works should be undertaken not only because of the usefulness of such projects as dams and bridges, etc., but also because proper timing of these projects can lend an important degree of stability to the economy. Thus it would be foolish to institute such projects at a time when most resources are fully employed and inflationary forces are at hand. It would be of greater benefit to the economy to commence them when labor and other resources are idle.

There are many people, however, who doubt the feasibility of

varying public works programs smoothly enough to act as contra-cyclical devices alone. Many projects, like schools and hospitals, are not always postponable. If schools and hospitals are in dire need, they may have to be built even during periods of boom. In addition, many types of "heavy" projects require both protracted planning and construction periods, and like many investment projects, once started, it is not usually possible to halt them without total loss and severe waste of the part of the investment already undertaken. This means that the possibility arises of undertaking these projects during times of deep depression and having to complete them in periods of booming prosperity, when sound fiscal policy would dictate that they be curtailed. Moreover, there are the ever-present problems of *forecasting*, of being able to discern promptly when a period of deflation or inflation has actually set in. As a result, a great deal of emphasis is placed on other aspects of budgetary policy, namely, personal and corporate income taxes and unemployment payments. The objective is to obtain as large a degree as possible of "built-in flexibility," that is, measures which ensure that government income and expenditures will *automatically* provide compensatory offsets to declines or rises in national income.<sup>1</sup> Thus pay-as-you-go income taxes quickly and easily reduce and increase people's disposable income as national income rises and declines during prosperity and depression periods; unemployment compensation is also a good automatic stabilizer, because payments into compensation reserve funds increase and payments out of such funds decrease automatically during boom periods, while the opposite is true during deflationary times. We shall have more to say on this subject later on.

Contra-cyclical public policy raises the question of *budget balancing*. Many advocates of this sort of policy insist that such a program is fully compatible with balanced budgets. However, instead of seeking to balance budgets annually (which would entail budgetary behavior that would move *with*, and thus *accentuate*, the cyclical movements, instead of behaving in a compensatory, offsetting

<sup>1</sup> Cf. Committee for Economic Development, *Jobs and Markets* (New York, McGraw-Hill Book Company, Inc., 1946), Chap. V and *passim*; additional discussion and references are to be found on pages 549-553 in Chapter 15.

fashion), these people propose the balancing of budgets over the whole cycle. Deficits are thus permissible during periods of depression, but these must be balanced out by budgetary surpluses during periods of boom. Cyclically balanced budgets would be achieved by manipulating taxes and government expenditures in the appropriate manner.

At once a question arises (out of skepticism) that upswings and downswings of each cycle will always be of equal duration and intensity. Certainly, there is little historical basis for such a position. Failing these similarities in the different phases of the cycle, a policy of cyclically balanced budgets implies the necessity of imposing deflationary measures, such as tax increases, curtailment of government outlays, and, even, some debt retirement in periods of drawn-out depression, and possibly, though unlikely, the opposite type measures in times of boom, if the budget is to be balanced.

A possible variant of this approach, designed to rid it of these questionable features, has been suggested by the Committee for Economic Development.<sup>2</sup> The proposal of this group is that taxes be set at rates which will balance the budget only at high levels of national income, and then let alone. Hence if business cycles were largely characterized by relatively prosperous years, there would be a budgetary surplus, or if depressed and prosperous years were fairly similar in length and intensity, the budget might be balanced. But if one or more cycles were dominated by depression years, there would be no attempt to balance the budget, and a deficit would be permitted to continue as long as the national income was too low to enable tax revenues to provide a balanced budget. No deflationary forces, therefore, would be superimposed on the economy during periods of low levels of business activity. In addition to this last characteristic, this type of budgetary policy is reputed to have the advantage of a fixed tax structure, which, in turn, is supposed to remove one strong element of uncertainty from the calculations of businessmen. Moreover, such a policy frees the economic authorities of the difficulties and uncertainties of forecasting and timing.

<sup>2</sup> See C. E. D., *Taxes and the Budget* (New York, Committee for Economic Development, 1947).

One decided disadvantage, in the eyes of many, of this type of policy is that the government is permitted no leeway for *active* intervention to smooth out cyclical movements. Those who favor deliberate reductions of tax rates plus broadly expanded expenditure programs during periods of decline and depression, and tax rate increases along with curtailed outlays during periods of inflation, assert that the issue of balanced budgets *per se* is *passé*. The general term which has grown up in connection with this type of thinking is known as "functional finance."

Proponents of functional finance view the budget purely as an instrument for maintaining the economy at high levels of employment. In times of inflation, funds should be withdrawn from circulation through the media of high taxes, government borrowing from nonbank groups, etc. Expenditures should be sharply curtailed or at least financed solely from taxes. On the other hand, during periods of depression taxes should be sharply reduced, expenditures greatly expanded in all forms, and this form of budget deficit should be maintained as long as the economy remains below the level of full employment of all its resources, regardless of the size of the national debt. For those who fear certain burdensome effects of a large public debt, advocates of functional finance offer the suggestion of interest-free borrowing in the form of newly issued currency. Thus the national budget is viewed solely as an instrument of policy designed to maintain stability in the economy at high levels of employment. Balanced and surplus budgets are important only in so far as they are measures to contain inflationary forces and nothing more.<sup>4</sup> Since we shall discuss the problems of functional finance at length in the following chapter, we shall defer further discussion of it for the moment.

#### THE POLICY IMPLICATIONS OF SECULAR STAGNATION (OR SECULAR INFLATION)

Secular stagnation policy is almost implicitly suggested by the hypothesis itself. The stagnation thesis asserts, in effect, that be-

<sup>4</sup> As a matter of fact, there are two ways of unbalancing budgets. One consists of holding taxes constant and varying government expenditures; the other consists of varying taxes while maintaining expenditures. These types of budget policy will be discussed at some length in the next chapter.



cause the level of investment in the future will tend to be permanently low, without sufficient offsetting upward shifts in the consumption function, the equilibrium level of national income will tend to remain below the full employment level. Hence it is necessary that public investment take up the slack; it should be set at a level which, given the value of the investment multiplier, will close the aforementioned gap between the level of income dictated by the private sectors of the economy alone and the full employment level of income. Moreover, it follows, if investment opportunities are deficient, that measures should be taken to reduce sharply the rate of *savings*. In the absence of sufficient investment to absorb the savings forthcoming at high levels of income, these savings obviously become a depressive weight on the economy. Highly progressive income taxes are called for, to reduce the incomes of the rich, who save too much of their current incomes. In addition, family subsidies are in the offing to the low-income groups, whose marginal propensity to consume is comparatively high. To the extent that the nation's propensity to consume is thus raised, the level of government investment required to achieve a full employment national income is reduced.<sup>4</sup>

At best the stagnation thesis remains a hypothesis which has yet

<sup>4</sup> Recently some doubt has been cast on the efficacy of proposed redistributive tax measures designed to raise the propensity to consume. Mr. H. Lubell in an interesting study of empirical data on consumption propensities of different income groups, which included analysis of effects of redistribution by statistical means, obtained results which indicate that not nearly as much should be expected from redistribution as has been supposed by many economists. There are a number of reasons for this. Perhaps the most important is that the marginal propensities to consume of the different income groups up to \$5000 a year are pretty much the same, and the middle- and low-income groups receive the bulk of the national income. For the latter reason, also, it is evident that not too much of the national income can be redistributed. Moreover, the percentage of national income devoted to consumption is so high (over 80 per cent) that the increment in consumption turns out to be very small. See H. Lubell, "Effects of Income Redistribution on Consumer's Expenditures," *American Economic Review*, XXXVII (March, 1947), pp. 157-170; and *idem*, "Correction," *loc. cit.* (December, 1947), p. 930.

However, one point that is apparently overlooked is that the reduction in the level of savings, which is fairly large percentagewise, will serve to limit the fluctuations in the absolute volume of savings. This result, in turn, will greatly diminish the effects of fluctuations in investment, assuming, of course, that efforts are made to prevent offsetting increased use of bank credit. We shall refer to this effect again.

to be subject to empirical verification. To pursue, explicitly, monetary and fiscal policies based on it might well undermine the confidence of businessmen, to whom we are beholden for investment activity. The result could conceivably be an atmosphere sufficiently hostile to businessmen as to damp the level of investment activity to an extent that would appear to lend credence to the stagnation thesis. Furthermore, certain wage-price policies might arise which could well make inflationary forces uncontrollable; this point, too, will be developed in the next chapter. On the other hand, we have no definite proof that the stagnation thesis is positively incorrect. Happily, we have some way out of this apparent dilemma. Stagnation will undoubtedly make its appearance in the form of a deep, chronic depression. That is, as was the case in the thirties, a depression will be followed only by partial recovery, leaving a hard core of unemployment. If we gear our monetary and fiscal policies to meet long, deep depressions, we shall have developed the large basis of a stagnation policy. The latter will be, in the main, an extension, with some modification, of the former. Modifications might conceivably take the form of much more severe taxes on corporate and high personal incomes, and perhaps taxes on saving and hoarding, with the objective of curtailing savings and stimulating consumption to offset what would be too low a level of investment.

At the present time, there are signs that under the stresses of "hot and cold war," we may be entering upon a period of prolonged inflationary pressures. The whole question of the validity of the stagnation thesis may well be pushed into the background for some years to come. In this case it is necessary to have fiscal and monetary devices at our disposal which will be just as effective in fighting disruptive inflationary forces as those which are used in fighting deflationary movements. Unfortunately, some extra problems are created, for the same fiscal and monetary controls are not always applicable in both situations; this is particularly true of the tax structure, a point to be discussed later. In general, however, if used vigorously, such controls are easier to handle in peacetime inflationary periods than in deflationary periods. It is always easier to restrict investment and consumption than to encourage them. Par-

ticularly the problem of incentive effects of taxes and the like is greatly diminished during periods of inflation. Monetary devices are also very much stronger in combating inflationary forces than deflationary forces. If the monetary authorities are given the power and *want to*, they can always curb the active money supply, that is, they can always limit borrowing, while their powers to encourage borrowing during periods of depression are greatly restricted.

The exigencies of war finance may force direct price and rationing controls, however. If government military outlays are suddenly forced to very high levels, it is likely, for political and incentive reasons, that taxes will not be raised proportionately. Neither can the nonbank public be relied upon to buy enough bonds. Recourse will of necessity be had to the banking system. The resulting expansion in the money supply at the same time the supply of civilian goods is shrinking will, in all likelihood, bring rationing and price controls upon the scene.

It is time now to turn to a more detailed discussion of monetary and fiscal policies. The philosophy surrounding the ensuing discussion will consist of the following. Monetary devices, although admittedly weak in and of themselves, should be employed to the full, making them serve as useful complements to the stronger fiscal devices. In the area of fiscal policy, strong efforts should be made to incorporate as much "built-in flexibility" as possible, to ensure as many automatic budgetary offsets to income fluctuations as we can get. These "automatic stabilizers" have the advantage of minimizing the difficulties that arise from forecasting and timing uncertainties. By automatically responding in a corrective way to inflationary and deflationary movements in the national income, stabilizing measures (like pay-as-you-go taxes and unemployment payments) provide authorities with a period of leeway, in which to determine whether such movements appear to be going beyond tolerable limits.

However, once it is decided that strong and lasting inflationary or deflationary movements are in the offing, sole reliance on automatic stabilizers is, in the opinion of the present writer, inadmissible. Vigorous and decisive fiscal and monetary action is called for.

The national budget and debt should be regarded as stabilizing devices and used for these purposes. If in deep and lasting depressions, the national debt appears, for reasons to be discussed, to be becoming burdensome and actually reducing the effectiveness of other fiscal measures, recourse must be had to interest-free debt, that is, newly issued currency. Thus, it is to be seen that many of the ideas of so-called functional finance will be embodied in the ensuing discussion. The remaining part of the present chapter will be devoted to the problems of monetary policy. The following chapter will be taken up with the problems of fiscal policy.

### THE ROLE OF MONETARY POLICY

Monetary policy may be taken to consist of the manipulation of the various instruments of control at the disposal of a country's central banking authorities. These instruments of policy include the rediscount rate (the rate charged the member banks on loans from the central banks), open-market operations (the purchase and sale of securities on the open market by the central bank), and changes in the legal reserve ratios (the ratio of reserves to deposits) of member banks as required by the central bank, all of which are usually described as *quantitative* credit controls. Quantitative controls are those which are designed primarily to control the total money supply, without regard to the uses to which it is put.<sup>3</sup> A second category of credit controls embraces the so-called *qualitative* instruments, namely, consumer credit controls and margin requirements on the purchase of stock market securities. As may now be evident, the latter type of controls primarily aim at controlling the use to which credit is put rather than the total volume of credit. However, such controls often do serve to curb the aggregate volume of credit, as an incidental effect to the control of the uses. We shall concentrate our discussion mainly on the quantitative controls, for, by and large, these are of much greater importance in the central banks' kit of policy tools.

<sup>3</sup> For the sake of completeness and accuracy, this statement needs to be qualified with the remark that insofar as the central banking system adheres to the commercial banking theory of lending only on the basis of commercial paper, as opposed to stock securities and the like, a certain amount of *qualitative* credit control is exercised through the quantitative instruments.

*The Ends of Monetary Policy*

The general objective of monetary policy in the modern industrial economies should be, and in virtually all countries is, the maintenance of economic stability at high levels of employment.<sup>4</sup> Since stagflationist policies have not been accepted at high administrative levels in most countries, such objectives imply that monetary policy is to be used as a counter-cyclical tool. Under these circumstances we may define the immediate ends of monetary policy a bit more closely. During periods of deflation and depression, the aims are to expand the money supply: (1) to offset the decline in velocity which usually occurs during these times; (2) to satisfy all the demands for hoarding for precautionary and speculative purposes; and thus (3) to build up the cash position of banks and nonbank groups, including consumers, as a means of directly stimulating easy lending, investment, and consumption; and, also, (4) through the piling up of liquid cash assets, to drive bank and nonbank lending groups into securities in order to force down the structure of interest rates as a way of stimulating investment. Points (3) and (4) have been separated because increasing the liquidity of the various groups mentioned serves to stimulate investment both directly and indirectly through the lowering of interest rates and easing of other lending conditions.

In periods of inflation, the aims of monetary policy are, of course, the opposite of those of depression periods. The supply of money either is (1) kept from expanding or slowed down in its rate of expansion; or (2) reduced, to offset the increase in velocity that or-

<sup>4</sup>This has not always been the goal of monetary policy in the eyes of central banking authorities. Other goals in the past have included the facilitation of the workings of the gold standard, the confining of commercial bank lending to "the needs of trade" as reflected in the volume of commercial paper, and the maintenance of stable price levels. In recent years, the Federal Reserve System in the United States has also been concerned with "maintaining order in the security markets" and, in the postwar years, under pressure from the U.S. Treasury, was faced with the problem of keeping interest rates on government securities from rising. Since it is now the avowed policy of the Federal Reserve System to maintain economic stability at high levels of employment, the monetary authorities found themselves in somewhat of a dilemma. For maintenance of a particular structure of interest rates is not always compatible with the preservation of economic stability, particularly in times of inflationary tendencies. This latter point will be elaborated upon later on.

dinarily takes place at these times, as people optimistically dishoard from speculative and precautionary idle cash balances, and to reduce the volume of liquid assets all along the line in the hope that consumption and investment will be reduced directly and through the medium of higher interest rates.

### *The Means*

The means to the above-mentioned ends we have already listed, and their applications, are probably familiar to most readers. During depressions, open-market purchases are engaged in, rediscount rates are lowered, and reserve ratios are lowered. Most of these operations are aimed at influencing directly the lending activities of commercial banks, and indirectly, through the lowering of interest rates and general easing of credit conditions, the rate of investment.

With the lowering of the rediscount rate, it is hoped that member banks will lower their discount rates, and so bring down the level of rates on all types of short-term securities, in the first instance, and ultimately the level of interest rates on various types of long-term securities, thereby stimulating the rate of borrowing and investment all along the line. If the reader will recall the relationship between security prices and interest rates, he will readily understand this process. The entire structure of interest rates, running from those on very short-term paper to those on long-term securities, has a tendency to move together. Thus when the interest rates on very short-term paper fall, relative to the rates on longer-term paper, lenders seek to put their funds into the latter type of securities. This may be interpreted as an increase in the supply of loanable funds available for the longer type of lending, so that the interest rates on these types of loans fall, or it may be interpreted as an increase in the demand for the longer type of securities, so that their prices rise; a rise in the prices of securities effects a reduction in the yields on these securities, or, again, a fall in interest rates.<sup>7</sup> It is partly through this mechanism that central banking authorities ex-

<sup>7</sup> Thus a \$1000 par value bond with an interest rate of 5 per cent (or \$50 per annum) will actually yield only a 4 per cent return if its price is bid up from \$1000 to \$1250 ( $\$50/\$1250 = 4$  per cent). It is to be noted that the process described in the text occurs only when the public expects short-term interest rates to remain low.

pect the lowering of the rediscount rate to bring down the entire structure of interest rates and provide a stimulus to investment in short- and long-term outlets (working and fixed capital).

The rediscount rate is only one of the means by which a central bank may seek a reduction in interest rates. Open-market purchases of all types of securities, short- and long-term, would achieve the same goal, and more rapidly. Most central banks, however, are usually limited, more or less, to government securities in their open market operations. Their open-market purchases thus directly bring down the interest structure only on government securities.<sup>4</sup> However, the same type of shifting process, described above, will eventually bring down the interest rates (yields) on private securities. Lenders will seek to get their money into the latter types, whose yields are higher; but their very actions will drive the prices of these securities up and their yields down. The whole structure of interest rates will tend to fall.

The effects of open-market operations are not confined to the effects on interest rates. They may be employed to increase the liquidity of bank and nonbank groups, and so provide a stimulus to "easy" lending, investment, and also consumption, directly, without the medium of interest rates. When securities are purchased from banks, in effect the composition of assets of bank portfolios is altered in favor of non-interest earning cash assets at the expense of the interest earning government securities. There is a rise in excess reserves of the banks to the extent of the open-market purchases. The aim of increasing the liquid cash reserve position of the banks in this way is to satisfy depression-induced desires for precautionary (emergency) and speculative cash balances and to encourage them to lower their interest rates on loans, and ease other lending conditions (*e.g.*, collateral security requirements), all in an effort to get them to expand their earning assets in the form of loans and investments. With this, of course, is the hope that easier borrowing conditions will spur business borrowing and investment activities.

<sup>4</sup> As above, this may be viewed as an increase in the supply of loan funds for government paper, thus lowering the interest rates on these, or as increase in the demand for these securities, thus driving up their prices and driving down their yields. It should be obvious that these two views represent the same thing; they are two sides of the same coin.

Central bank security purchases from the *non-bank* public serve to increase the liquidity position of these groups, too. The hope is that building up the cash position of the public in this way will satisfy its thirst for hoarding for precautionary or speculative purposes also, and by building up cash balances beyond these requirements, give a boost to investment activity on the part of business firms and consumption activity on the part of household units.

It is possible for the central bank to increase the liquidity position of bank and non-bank groups in other ways through open-market operations. This is done by permitting these groups to exchange long-term for short-term securities in their asset portfolios. Depressions are characterized not only by movements from securities into cash, but by a general movement from long-term (less liquid) assets into short-term (more liquid) assets. Thus the central bank may sell short-term securities on the open market at the same time it is buying long-term securities. Building up the general liquid asset position of the public is expected to provide the same kind of stimulus to lending, investment, and consumption that the increase in its cash position does.<sup>9</sup>

The reduction of legal reserve ratios has the same effect on bank reserves as do open-market purchases, and the hoped-for results are also the same as those of open-market purchases involving bank-owned securities. Unlike open-market operations, however, the direct effects of changes in reserve requirements are restricted to banks alone.

The qualitative credit controls may also be manipulated with a view to stimulating investment and consumption activity during depressions. By reducing margin requirements, central banks raise the loan value of stock securities, that is, reduce the amount the stock purchaser has to pay in cash and raise the amount that may be borrowed with the security as collateral. Thus it is hoped that existing money and newly created bank credit will flow more easily into

<sup>9</sup> Not only are depressions marked by shifts from less liquid into more liquid assets, but also from more risky into less risky securities. Most central banks, however, cannot deal in private securities, a restriction which prevents them from providing the public with less risky governments *in exchange for* more risky private securities. However, the Treasury can provide riskless governments by expanding its borrowing operations.



the equity capital (stock) markets, providing funds more readily for investment. Lowering the down-payment requirements on consumer durables and lengthening the period over which the installment payments may be continued is designed to stimulate the consumer demand for durable consumer goods in times of depression."<sup>10</sup>

During periods of inflation, these various instruments of policy are simply reversed in their application, the goal being the reduction of the money supply and the tightening of credit conditions in general. Rediscount and acceptance rates are raised in order to raise the level of short-term interest rates, and, through the shifting process from longs to shorts, ultimately to bring about a rise in the yields (fall in prices) of the longer-term securities, also. The hope is that the general rise in the structure of interest rates will restrict the volume of investment, and thus damp the inflationary forces.

Similarly, the use of open-market *sales* is designed to curtail the volume of bank lending and raise the structure of interest rates. Insofar as open-market sales absorb the cash reserves of banks, they restrict their ability to lend and invite them to raise their interest rates on loans and tighten up other borrowing requirements. Usually, such action will cause banks to *ration* capital more strictly and to confine their loans, more or less, to old, established customers. This limits greatly the creation of new credit, and it will serve to damp investment activity in general.

During inflationary periods, there is a general tendency for the nonbank public to reduce their precautionary and speculative idle cash balances, under the pressure of the general prevailing optimism of these periods. Disharding means, in effect, a rise in the velocity of money circulation. The more liquid households and financial in-

<sup>10</sup> Actually, there is a strong case for completely restricting the creation of consumer credit by the banks. We have observed that consumer installment credit exerts a great destabilizing force on business-cycle movements. It tends to expand rapidly under the impetus of rising consumer incomes, thus accelerating the rate of increase in the national income during upswings. Then because consumers later have to devote important amounts of their incomes to the repayment of the loans, it adds greatly to the deflationary forces of downswings, accelerating the rate of decline in the national income. For an extended analysis of the role of consumer credit in business cycles, see G. Haberler, *Consumer Installment Credit and Economic Fluctuations* (New York, National Bureau of Economic Research, 1942).

stitutions are, the freer they feel themselves to put their excessive idle balances into securities or to spend on consumer goods. The prevailing optimism will also raise the marginal efficiency of capital and sharply reduce the need for precautionary balances, inducing highly liquid business firms to disband and devote these balances to investment.

Central banks may hope to forestall some of this activity by reducing the cash position of these various groups through open-market sales, and also, if possible, buy up short-term securities to effect a shift of assets in general in the direction of less liquidity.

In the process of engaging in open-market sales, the central banks will also raise the level of interest rates on government securities by reducing the supply of loanable funds (or, if you like, pushing down the prices of the governments, thus raising their yields). Lenders will shift out of private into government securities, but these actions will cause the prices of the former to fall and raise their yields. Open-market sales thus can be employed to bring direct upward pressure on the structure of interest rates, also in the hope of curtailing the rate of investment.

The raising of margin requirements can also be used to restrict the flow of bank credit into investment activity and, particularly the use of it to engage in speculative activity on the stock market in times of rising stock prices. At the same time, the tightening of consumer credit conditions, like the raising of down payment requirements and the shortening of the installment paying period, also serves to limit an important source of demand for bank credit during inflationary periods.

### *The Effectiveness of the Means*

Monetary policy, *by itself*, is virtually powerless to overcome the forces of major depression. During periods of inflation it retains a large degree of strength, for the monetary authorities, given the ability and the desire, can be put in the position of absolutely restricting the supply of bank credit; whether they do or not is perhaps another question. The following section is devoted to an examination of the reasons why monetary policy is so helpless to combat depressions alone, and what factors may interfere to prevent

effective action on the part of monetary authorities during boom periods.

### *Helplessness of Pure Monetary Policy during Depressions*

The simplest way of characterizing the futility of pure monetary policy in depressions is to say that you can make borrowing conditions as easy as possible, but you can't make people borrow. In the first place, lowering the rediscount rate on loans to commercial banks, open-market purchases designed to increase their reserves, and the lowering of their reserve ratios, all may simply find the banks building up their excess reserves. This may turn out to be the case because the banks themselves refuse to lend in order to build up their idle cash balances for speculative and precautionary (emergency) purposes. It must not be forgotten that excess bank reserves may represent hoarded cash balances in the same manner that idle balances of nonbank groups represent hoarding activities, and for the same reasons. If the banks are intent on building up their cash position, lowering the rediscount rates achieves absolutely nothing, for the banks have no reason to borrow.<sup>11</sup> And under these circumstances, if open-market purchases and lower reserve requirements have any effect at all, it is likely to be severely delayed. By this we mean that these activities *may* sooner or later satisfy banks' desires for hoarded balances, and if this happens, banks may then be willing to increase their holdings of loans and investments. However, it is also possible that the speculative motive will cause the banks to pile up idle balances (excess reserves) for an indefinite period, rendering the central bank authorities helpless in this situation.

Central bank authorities are not limited in their open-market purchases to the banking system; they may also buy from the non-

<sup>11</sup> Moreover, during the twenties the Federal Reserve System undertook a campaign to impress upon the banks a policy of limiting borrowing from the Federal Reserve Banks to emergency needs and not using borrowed funds for *relending* purposes. This was to maintain the effectiveness of open-market sales during the inflationary periods of the late twenties. At the same time, partly as a result of the Federal Reserve action, banks have developed an aversion for remaining in debt to the Federal Reserve Banks. When they are in debt to the System, they often utilize newly acquired reserves to reduce their debt. To the extent that these developments are in force, they reduce considerably the effectiveness of lowered rediscount rates and open-market purchases.

bank public. In this case, as we have noted, one of the purposes is to build up the liquid cash position of the public, allowing them to fill their desires for hoarded cash on the basis of precautionary and speculative motives. If, in conjunction with the Treasury, they also happen to sell short-term securities, we may accept this as another attempt at permitting the public to shift from less to more liquid assets.<sup>12</sup> However, even in this case, the demand for cash balances may be insatiable, either for precautionary or speculative reasons, or both. In the face of such circumstances, as with the banks, the monetary authorities are helpless. The lending portions of the non-bank groups will continue to refuse to lend, and the investing groups (the business firms) will also be extremely reluctant to invest.

### *Efforts to Work through the Interest Rate*

It was pointed out earlier that a good deal of monetary policy is directed toward increasing spending not only through building up the liquidity position of bank and non-bank groups, but also toward reducing the level of the general structure of interest rates. Although lowering the rediscount rate may exert little influence, for the reasons cited earlier, open-market purchases are also at the disposal of the monetary authorities for this purpose. As a matter of fact, open-market purchases act to bring strong downward pressure on interest rates at the same time they increase the liquidity positions of the various groups mentioned. Again, the reader is free to interpret this as the consequence of an increase in the supply of loanable funds (created by the central bank) or a rise in (all) security prices, or fall in yields, consequent upon the open-market purchases.

There are a series of reasons why the central bank authorities may not be successful in reducing the level of interest rates. All these reasons are products of the speculative and precautionary desires for liquidity. The monetary authorities, it will be recalled, rely to a large extent on a shift from government securities into private

<sup>12</sup> In this case, the stimulating effect *may* not be as great as the building up of cash balances, for short-term securities, even governments, are still not cash. To the extent that these short-term securities do satisfy liquidity desires, however, they are a potentially stimulating force to spending, both on investment and consumption.

ones to secure the decline in interest rates on all types of securities. They may work only on short-term securities and rely on a shift from shorts to longs to bring down the yields on the latter, or they may purchase both longs and shorts. If they confine their activities to shorts, as they have often done, their hopes will be realized only if bank and non-bank groups are convinced that the short-term interest rates are down to stay. But these groups may be highly skeptical of this (this is the speculative motive in operation), particularly if short-term rates were high in the preceding prosperity periods; this might be true if these rates were raised to very high levels to stem an inflationary tide during the preceding boom. At the same time, as we have also noted, all the tendencies are for the various groups to move in the direction of short-term, more liquid, securities. Thus in spite of the fall in yields of the latter relative to those of long terms, the drive for liquidity may easily induce the various groups to continue to move out of (rather than into) longs. We then have another reason for efforts to reduce the general interest rate structure by concentrating on short-term rates being frustrated.

The central banks may also purchase long-term securities directly, and force down their yields in the process. But their hands are often tied by legal regulations. Most central banks are required to deal only in government securities. Thus they must rely on shifts in this case, too, to bring down the interest rates on private securities. As before, their efforts may be frustrated by the belief that the lower level of interest rates on government securities is temporary, so that people will not risk getting into private securities. There is even a stronger reason for the public's refusal to shift to private securities. The general quest for liquidity that characterizes most depressions is marked not only by a shift from less liquid to more liquid assets, but also by a shift from more risky to less risky securities. Inasmuch as the securities of most governments are far less risky than those of private business units, we can expect bank and non-bank groups alike to seek out government securities insofar as they seek out securities at all, even though the yields on governments are lower. This tendency will be further enhanced by the added risk premia which are bound to be placed on private securities during depressions.

Finally, the old bugaboos, the precautionary and speculative motives, may act in other ways to prevent interest rates from falling. The speculative motive will operate if people feel that lower interest rates are a temporary phenomenon. The precautionary motive will operate under the pressure of sharply reduced profit expectations and income and employment anticipations. Reduced profit margins will raise the possibility of losses, of risk of being illiquid, of debtor defaults, and of being denied credit from banks. The latter contingency becomes a very important element during depressions, for banks give a great deal of consideration to current earnings positions in deciding on the advisability of granting new loans or renewing old ones. Consumers, too, build up their cash positions as fears of reduced incomes and employment grow. On these grounds, there is great pressure on the part of business firms and households to build up their cash balances for contingency purposes, to avoid the risk of being caught illiquid and having to undergo forced liquidation. Reference to the discussion of the effects of speculative and precautionary motives in Chapter 4 will indicate how these hoarding activities will keep the interest rate structure from falling. Briefly, the former causes the liquidity preference schedule to become increasingly elastic, perhaps even perfectly so, while the latter causes it to shift upwards; in both cases they prevent increases in the money supply from reducing the level of interest rates (beyond certain levels).

Let us assume, for the sake of argument, that the central bank does succeed in bringing down the structure of interest rates. Even then serious doubts exist concerning the efficacy of the results. In the first place, the marginal efficiency of capital schedules may be so inelastic, both with respect to reductions in interest rates and to increases in general liquid asset positions, including cash, that the increase in investment which does occur is not nearly sufficient to lift the economy out of the throes of depression. In the second place, the marginal efficiency of capital schedules may *shift* to such a low position that the interest rate structure cannot be reduced *enough*. There are certain floors to the level of interest rates below which they cannot be reduced. Some of these floors may be set by the speculative and precautionary motives.

Even if these liquidity preference motives do not operate to set an absolute floor, we have observed that there are other elements which operate to do so. One is the obvious factor of administrative costs of lending and borrowing. We may include in administrative costs the value that lenders place on the inconveniences of shifting the composition of their assets between cash and securities and even among different types of securities, plus the institutional lending costs. Floors will also be established by risk premia, arising both from the possibility of default by borrowers and from the possibility of losses suffered from the sale of securities at reduced prices. These floors may effectively prevent the structure of interest rates from falling to a level low enough to offset the decline in the marginal efficiency of capital schedules, and thus promote a rate of investment consistent with full employment.

The inelasticity of the marginal efficiency of capital schedules, together with their downward shift, may be described more vividly perhaps in the following manner. The extreme pessimism that almost invariably accompanies major depressions knocks the props out from under any long-range planning periods. The deep uncertainty of the future, especially during such times, forces businessmen to confine their plans to the very immediate future; long-term investment programs are abandoned. But we have seen that changes in the interest rate are effective in the discounting (capitalization) process only on distant-future revenues, present values of near-future revenues changing little as interest rates change. With long-range investment programs shunted aside during depressions, the effectiveness of lower interest rates on the present values of future revenue streams is reduced to a minimum.

Moreover, a decline in profit expectations during depression periods may be expected to be accompanied by a sharp rise in risk factors. We have already noted some of them. There is the abiding fear of being caught in an illiquid position and having to undergo forced liquidation of some expensive assets at a large loss. This risk arises from the possibility of loss of funds through debtor defaults. A much stronger possibility is that of being denied funds from the banks, who place so much stress on current earnings positions and who may demand prohibitive collateral requirements. And, finally,

we have the more obvious risk of inadequacy of future market demand. These risks not only induce a mad rush for precautionary cash balances, but they also cause the risk component of the discount factor in the capitalization process to rise sharply and swamp the interest rate component, rendering negligible any declines in the latter.<sup>13</sup>

For all the various reasons mentioned, monetary policy, pursued alone during depressions, is beset with weaknesses and uncertainty. Nevertheless, there may be occasions when antidepression monetary policy may be effective. Furthermore, it is always true that, other things being equal, the more liquid the asset position of lenders and investors and the lower the rate of interest, the higher will be the rate of investment. Of course, the difficulty with "pure" monetary policy is that other things are rarely equal, especially during depressions. Nevertheless, when other (fiscal) policies are being pursued, aimed at stimulating consumption and investment from other approaches, the statement that investment will be greater the lower the structure of interest rates and the more liquid the public's asset position remains an important one to keep in mind. Alone, monetary policy during major depressions is well nigh futile. Employed alongside fiscal devices, it is a very useful adjunct to the latter and should be applied for all it is worth.

### *Monetary Policy during Inflation*

The picture to be painted of the potential effectiveness of monetary policy during periods of inflation is much brighter. It is very much easier to raise interest rates than to lower them, and they can be raised as high as the monetary authorities desire. Open-market sales may also be carried out to reduce the liquidity of bank and nonbank groups and provide another strong depressant factor on lending and investment. Margin requirements and consumer credit conditions may also be tightened. And if consumption and invest-

<sup>13</sup> For a more extended elaboration of these points, see Chapter 4, pp. 183-184. An excellent discussion of some of these points is also to be found in W. J. Fellner, *Monetary Policies and Full Employment*, 2d ed. (Berkeley, University of California Press, 1947), Chap. 5 and *passim*, and Hicks, *Value and Capital*, 2d ed. (Oxford, England, Oxford University Press, 1946), pp. 258-263.



ment, should turn out to be inelastic to all these measures, there remains the power to raise reserve requirements to the level necessary to prevent any further expansion of bank credit, provided the authorities are willing to use this drastic instrument.

It is evident from past experience, however, that monetary policy has not been too successful in preventing inflationary booms either. This lack of success in the past has been partly the result of factors inherent in monetary policy, as is the case in depression, and partly the product of factors more or less extraneous to the principle of monetary policy.

In applying restrictive measures directly to the banks, monetary authorities are often confronted with a variety of difficulties. Take the matter of the rediscount rate. There is difficulty in raising it too high for fear of placing too much pressure upon certain banks at the expense of others. In order to be effective it is often necessary to raise it above the rates banks charge customers. But not all banks go into the same types of loan securities. Smaller banks, away from the large urban areas, are apt to go into high-yield, rather risky assets. Banks in the large urban centers usually confine themselves to low-yield, relatively safe types of paper. The result is that in order to make the rediscount rate prohibitive to the former, it must be raised to such levels as to put undue pressure on the large urban banks; in effect, it must be sharply discriminatory against the latter. The consequence is that the central bank authorities seldom raise the rediscount rate high enough to be really effective.<sup>14</sup>

Moreover, raising the rediscount rate is of little avail if the banks won't or don't have to borrow. When there are excess reserves, the banks do not have to borrow, so that the higher rediscount rate exerts little effect on them. As we have noted earlier, the Federal Reserve System has attempted to cultivate a tradition against borrowing by the member banks for purposes of extending more credit. To the extent that this propaganda has been effective, the higher

<sup>14</sup> A possible exception to this statement is the usefulness and effectiveness of a rise in the rediscount rate in serving as a storm signal to bank and non-bank groups alike that the situation is getting out of hand, and that the monetary authorities intend to tighten credit conditions; therefore all had better begin to haul in their sails. However, the real strength of this effect has yet to be demonstrated, in the opinion of the present writer.

rediscount rate is again rendered ineffectual. Moreover, rediscount rates constitute a relatively small part of business operating costs. When this fact is taken into account along with the fact that during periods of inflation, small rises in costs are relatively easy to shift to buyers in the form of higher prices, it is easy to see that investment will be little deterred by the usual range of increase in rediscount rates.

It might be pointed out that the central bank, through its open-market sales, can bring about a rise directly in the general structure of interest rates. Certainly, the effectiveness of such operations is undoubtedly much greater during inflation than their counterpart during deflations and depressions. Long-range investment projects abound during booming prosperities, allowing changes in interest rates to operate on distant future revenues. The risk factor is considerably reduced in importance as a component of the discount rate.

Despite the comparative ease with which interest rates may be raised by the central bank and the greater importance they play in the investment decisions of businessmen, there remains an important degree of skepticism regarding the effectiveness of higher interest rates in stemming inflationary forces. For one thing the rise in the interest component of discount rates will be considerably offset by the aforementioned decline in the risk component. The rising tide of aggregate monetary demand is, in times of full employment, likely to push prices up at a tempo sufficient to give a sharp boost to profits and profit expectations. The result will be *upward shifts* in the marginal efficiency schedules, under the impetus of these optimistic profit expectations; such shifts may largely offset the rises in the level of interest rates. Thus upward shifts in the *position* of these schedules during booming prosperities may offset much of the effectiveness of their greater interest elasticity.

Moreover, the same optimism which induces the upward shifts in the marginal efficiency of capital schedules is also responsible for changes in the one element of the monetary equation over which central banks have little control, *viz.*, the (income) velocity of money. With risk elements largely reduced, bank credit rather easy, profit expectations good, and, on the part of households, in-

come and employment expectations high, there is apt to be a large amount of dishoarding of precautionary cash balances. These actions on the part of investors and consumers are likely to be particularly important in periods of rising prices, particularly when these groups expect them to continue. Then there is a rush to get into goods to beat the rise in prices, and a reluctance to get into securities in anticipation of rising interest rates (falling bond prices).

There is little the central bank can do to prevent this dishoarding, and, of course, dishoarding adds considerably to the inflationary forces, for it is synonymous with an expansion of the income velocity of money. These dishoardings may largely offset the contractions in the money supply being undertaken by the central bank. This would be particularly critical if the inflationary movements happened to follow a serious, prolonged depression, during which the central bank had industriously pursued a policy of expanding the money supply in order to allow people to satisfy their hoarding propensities, and thus stimulate their spending activities. In an ensuing inflation the large amounts of idle cash balances carried over from the depression would provide a major source of discomfiture to monetary authorities attempting to overcome the swelling tides of inflation.<sup>15</sup>

There is yet potentially one decisive instrument at the disposal of central banks during inflations. This tool is the curbing of the expansion of the money supply itself. In fact, it is actually the essence of monetary policy in periods of inflation that it is directed toward reducing the availability of credit. A policy of reducing the power of banks to lend, through open-market operations or increases in reserve requirements, makes it more difficult for banks to lend. It makes it necessary for them to develop a policy of capital rationing, to be more selective, that is, in the granting of new loans and the renewing of old ones. Any attempts by the banks to offset

<sup>15</sup> In view of historical evidence, care should be taken not to exaggerate the inflationary character of a rise in the income velocity of monetary circulation. In the past no important inflationary movements have been induced by this factor alone. Always the villain in the act has turned out to be a continuously expanding money supply. The belief of the present writer is, therefore, that if the money supply can be contracted, or at least kept from expanding, inflationary movements will soon run their course.

the effects of these central bank actions by borrowing can be minimized by central bank refusal to lend; this is true even of the Federal Reserve System, which, since the thirties, has the power to deny requests to lend if it thinks such lending to be undesirable from the standpoint of the health of the economy.<sup>10</sup> The end result is a reduction of the total money supply. Regardless, then, of the height of profit expectations, the ineffectualness of higher interest rates, etc., if businessmen cannot get any more funds from the banks, the major source of inflation is stopped cold.

If this is so, why haven't the central banks taken advantage of this power in the past? The reason is that they have either not had the power, or if they have, they have lacked the will to use it.

In many countries, the United States, for instance, the central banks have not, in the past, had absolute control over commercial bank reserves. In the United States this deficiency has been particularly acute, because of the fact that so many (state) banks remain outside the sphere of control of the Federal Reserve System. Thus changes in the reserve requirements of member banks do not affect those of non-member banks. Moreover, the powers of the Federal Reserve's Board of Governors in this connection are restricted to a doubling of the reserve requirements indicated by the law. This often leaves a large margin of leeway to banks for the further expansion of credit.

Even when central banks have had strong powers over reserve requirements they have been reluctant to use them. This includes the Federal Reserve System, which has indicated reluctance to use the powers it has had. The reasons for such unwillingness are quite varied. One is that the level of reserves among banks differs widely. Some may be practically at the limits of their (legal or customary) reserve requirements, while others have large amounts of excess reserves. Changes in reserve requirements are a very blunt instrument, however, affecting all banks indiscriminately. Thus, raising reserve requirements with the intent of restricting

<sup>10</sup> This latter remark is bolstered in importance by the reluctance of the member banks of the Federal Reserve System to get into debt to their Reserve Banks, together with the policy of discouraging continuous borrowing pursued by the System.

banks with large excess reserves often imposes undue hardships on others whose reserves are virtually at the limit. Central banks hesitate to involve themselves in such a situation. This situation is heightened in the United States by the threats of member banks to leave the Federal Reserve System if *their* reserve requirements are raised, while those of nonmember banks remain unaffected.

Of greater importance, perhaps (and this plus the remainder of the discussion applies to restrictive monetary policies in general), are the ever present political pressures to which the monetary authorities may be subjected. Much of this stems from the "new era" psychologies which often develop during prolonged prosperities. When profits and profit expectations are high, businessmen, bankers, and politicians alike bring pressure against any policies which will put a brake on the upward movement of the economy. Especial difficulty confronts the central bank when it has to face the fallacious economic reasoning, shared by all (uninformed) groups, that the extension of bank credit to producing enterprises is anti-inflationary because it leads to an increase in the output of the borrowing enterprises. In times of full employment, such a (widely held) attitude is dangerous, for it is clear that an expansion of output in one direction can only come from a contraction of output (through inflationary bidding) elsewhere. In addition, central banks have too often been plagued with adverse criticism, have been, too often, made to bear the major share of public criticism for cyclical slumps, even when they have pursued correct policies. Simultaneously, they have been accused of allowing booms to develop and of being responsible for their collapse. These criticisms have made them unduly sensitive to public opinion, and public opinion seems to be everlastingly opposed to steps which appear to threaten the maintenance of boom conditions.

Undue sensitivity to adverse public opinion has tended to make the monetary authorities overly cautious at times when quick action is called for. The seeds of deflation and depression are sown during inflation. It is in the very incipient stages of inflation that forthright central bank action is necessary. But the uncertainty that arises from inaccurate and/or incomplete knowledge often results in prolonged hesitation on the part of the central banks. Then,

as the inflation proceeds, doubts arise concerning the soundness of the economy and with these doubts, come fears that precipitate restrictive monetary policy may overreach itself and plunge the economy into deeper throes of deflation than might occur without central bank action. There is always the danger that restrictive credit operations, like open-market sales and raising of reserve requirements, may precipitate a violent collapse in security markets to such an extent as to invite panic and liquidity crisis. Nor are such results necessarily confined to these markets only. Public knowledge that it is the aim of credit policy to prevent prices from rising further, or perhaps effect a reduction in prices, may easily give rise to the belief that a wholesale series of downward price adjustments is imminent. The result, of course would be a wave of deferred buying and hoarding, as the public waits upon the price adjustments. Experience along such lines indicates that central bank authorities are not entirely unjustified in these fears.<sup>17</sup>

It is perhaps unjust to be too harsh with central bank authorities. Their hesitation is in large part a product of the incompleteness of our knowledge of the behavior of the economy. It is difficult to know just what stage of development of a boom the economy may be in. We have only to recall the forecasting errors that were made in connection with the postwar boom of 1946-1947 and the better part of 1948 and then the recession of 1948-1949. Most authorities were surprised at the boom in the immediate postwar period, and, having finally become reconciled to their errors, were equally surprised at the later recession. In the light of these weaknesses in our forecasting techniques, and other gaps in our knowledge concerning the behavior of modern economies, one cannot altogether blame monetary authorities for hesitating to take drastic policy measures before being convinced of the appropriateness of a particular course of action. Nevertheless, they have frequently been guilty of too long delays in taking some course of action, and, having

<sup>17</sup> During the late twenties, for example, the Federal Reserve authorities, partly as a result of adverse criticism they had suffered during the cyclical decline of 1921, indulged in an extended period of procrastination before employing a policy of monetary restriction. By the time they did so, it was too late, and the monetary restrictions served to accelerate the rate of monetary deflation during the ensuing periods.

taken action, guilty of a severe lack of aggressiveness in pursuing the course of action. The evidence is great, for example, that the Federal Reserve System was guilty of *following* the rise in interest rates during the late twenties rather than *leading* it.

Finally, we have the possibility of other policies conflicting with restrictive monetary policy and often pushing it to one side. The most important and widely discussed one in recent years was the policy of pegging the level of interest rates on government securities, particularly those on long terms. This policy was dictated in large part by Treasury desires to keep the interest burden on the national debt as low as possible, but also by the fear of precipitating a panic on the bond markets if the Federal Reserve System permitted security prices to fall (interest rates to rise). The policy of keeping securities prices from falling, in effect, gave to the commercial banks complete control over their reserves. Government securities were as liquid as cash; as soon as a bank found itself running short of cash, either because of the demand for bank credit or because of restrictive actions (raising of reserve requirements by the Board of Governors), they had merely to sell some of their government bond holdings at the pegged price. Such a policy is very desirable in times of deflation and depression. In times of inflation, it is an invitation to disaster. For it constitutes a permanent open-market purchase program on the part of the central bank at a time when restrictive credit operations ought to be in process. It is extremely doubtful whether the economy would be harmed as much by higher interest rates as it is by prolonged inflation. If the Treasury forced the central banking authorities to pursue such a policy on the grounds that in the long run a low interest structure will redound to the benefit of the economy, one may well wonder if too much importance was not being imputed to the role of interest rates in the investment decisions of businessmen. If the pegging policy was pursued in the interests of keeping down the costs of the public debt to the economy, it seems clear that the savings in these costs were completely wiped out by the additional costs imposed on the economy by the inflationary forces which were permitted to run rampant.

There have been other similar conflicts of policy in the past.

Very similar to the post-World War II experience was that which followed the end of World War I. In this case, too, the Federal Reserve System, to facilitate the sale of the last of the Victory bonds, found itself pursuing a policy of easy money while prices were threatening to soar to unprecedented levels. Conflicting objectives such as these, with monetary policy being made subservient to other goals, not always compatible with monetary stability, often make monetary policy appear futile in periods of inflation as well as in periods of deflation. This is not the case, however. When it has appeared to be so, close scrutiny usually reveals either the lack of legal power to exercise proper control or, for one reason or another, the lack of will to pursue corrective monetary policies during periods of inflation.<sup>18</sup>

### *Some Suggested Remedies for a Few of the Weaknesses of Pure Monetary Policy*

In view of some of the limitations on monetary policy discussed in the preceding pages, it seems desirable to discuss a few proposals for strengthening the hand of the monetary authorities.<sup>19</sup> The most important, and widely accepted, professionally, proposal for strengthening the monetary controls is the scheme for obtaining 100 per cent reserve banking.<sup>20</sup> This scheme would replace the present fractional reserve banking system with one in which the banks were required to hold one dollar of reserve for every dollar of demand deposits. The objective is to take away from the commercial banks the power of creating and destroying bank credit, the most important part of the money supply, and give it to the central banking authorities. In this way the money supply, while not necessarily held constant, would vary at the discretion of the cen-

<sup>18</sup> The foregoing discussion of the limitations was not meant to be exhaustive. Rather it was designed to touch upon the more salient features, particularly those which bear most strongly on the subject matter discussed in various earlier parts of the book. More extensive discussions may be found in almost any modern money and banking text. See also the list of supplementary references at the end of this chapter.

<sup>19</sup> Of necessity the proposals mentioned and the discussion of them will be brief. Therefore, the reader is again referred to any of the modern texts on money and banking for more extended discussions of suggested proposals.

<sup>20</sup> The most elaborate discussion of this proposal is to be found in the late Professor Irving Fisher's book, *100% Money* (New York, Adelphi Press, 1935).



tral monetary authorities, who, through open-market operations, would expand or reduce the total amount of money in circulation. The great advantage of this shift in the power to create and destroy money is that such changes as would occur in the money supply would be made by a body whose sole objective was the maintenance of economic stability, and not, as is the case at present, by large numbers of irresponsible bankers, whose quest for profits leads them, unwittingly, to reduce the money supply when it should be expanded and to expand it when it should be contracted.

Under the 100 per cent money scheme, the commercial banks no longer could create money for loans and investments. In fact, they would be deprived of their lending functions, their sole duty being that of acting as depositories for check money, providing for its convertibility to cash on demand and maintaining the bookkeeping system that would indicate the transfer of ownership of checking deposits. Their earnings would accrue from service charges on checking accounts, charges probably much larger than they are at present. Inasmuch as the method for instituting the 100 per cent reserve system may well be the exchange of cash by the central bank for the large volume of government securities banks now hold, an additional suggested source of earnings might be the continued payment of interest on the government securities to the banks.

Lending, short and long term, would be carried out by savings institutions, such as savings banks and insurance companies. These would be forbidden to create and issue money, but would be permitted to lend only those voluntary savings which had been deposited with them.

There has been some difference of opinion among proponents of 100 per cent money as to the exact role of the central monetary authority with reference to the money supply. Some have held that the monetary authorities should keep the money supply constant in the short run, but permit it to rise in the long run in accord with the secular growth of the economy. Others have felt that the monetary authorities should be free to change the supply of money, particularly to permit this variable to be used in a positive role for combating cyclical fluctuations. The present writer is firmly aligned with the second of these viewpoints. One hundred per cent money

does not, or should not, imply a constant or secularly growing money supply. It simply means that we are freeing ourselves of the haphazard, *undesirable* fluctuations in the money supply. Changes in the money supply are not in and of themselves bad; they are bad only when they act perversely. There is no reason why we cannot make them behave in a manner that will help us to even out the cyclical movements in business activity.

During the forties there came forth a series of proposals designed to permit the Federal Reserve System to regain a large part of the control over commercial bank credit it had lost in maintaining the aforementioned support policy of the government bond market. These proposals called for an important increase in the reserve requirements of the commercial banks, nonmember as well as member banks. They would also have required the banks to hold part of these higher reserves in the form of government securities. This latter provision would thus have deprived these securities of their character of being perfectly liquid *earning* assets, a position they held as a result of the pegging policy, and at the same time, would have prevented the banks from selling them to the Federal Reserve System in order to increase their reserves for purposes of further credit expansion. It is apparent that these proposals, with their emphasis on much higher reserve requirements (about 75 per cent of demand deposits), go a long way toward attaining the 100 per cent reserve system and would accomplish many of its objectives, principally that of limiting the banks' ability to vary the money supply. This so-called "security reserve" proposal <sup>21</sup> has a much greater chance of gaining acceptance than the more radical, but fundamental, 100 per cent reserve banking reform.

At best, a 100 per cent money scheme, or something similar, gives to the monetary authorities control over only one of the two monetary variables in the monetary equation. That is, *M*, the

<sup>21</sup> Various aspects of these "security reserve" proposals can be found in the following: L. H. Seltzer, "The Problem of Our Excessive Banking Reserves," *Journal of the American Statistical Association*, XXXV (March, 1940), pp. 24-36; Committee for Economic Development, *Jobs and Markets*, *op. cit.*, pp. 90-95; *Federal Reserve Bulletin* (January, 1948), pp. 14-23; and Board of Governors of the Federal Reserve System, *Federal Reserve Policy*, Postwar Economic Studies No. 8 (Washington, 1947), pp. 112-119.

quantity of money, is brought under complete, or nearly complete, control. However, there remains uncontrolled  $V$ , the velocity (primarily, the income velocity) of circulation. During inflations the gap may not be so serious. As was pointed out earlier, inflations in the past, at least, have been founded mainly on expansions in the money supply, not increases in the velocity of money. Further, it is possible for the monetary authorities to contract the money supply to offset the inflationary effects of dishoarding. It is during recessions and depressions that the inability to control the income velocity of money gives rise to so much heartache. For the great hoarding propensities that seize the public in the course of major downswings are one of the chief reasons for the severity of major depressions and constitute one of the greatest obstacles in the path of monetary and fiscal attempts at recovery policies.

The most important proposal for remedying this deficiency is that which suggests removing the costless (interest-free) character of hoarding by having the government levy a small (say,  $\frac{1}{8}$  of 1 per cent) monthly tax on hoarded balances, a tax which would also increase with the length of time over which balances were held idle. In this way, there would be a distinct incentive to people to make their balances available for investment rather than hoard.

One distinct advantage this suggestion holds in connection with the latter effect (added inducement to lend rather than hoard) has been noted by Professor Hart,<sup>22</sup> among others. Earlier, we pointed out the difficulty of lowering interest rates sufficiently to call forth a full employment level of investment. There are floors set to interest rates by such factors as risk (from default and declines in security prices), administrative costs, and precautionary and speculative hoarding. Hoarding is made profitable under certain conditions because existing monetary regulations permit the holding of money without cost, that is, there is no interest charge on the holding of idle balances. This contrasts with all types of assets (securi-

<sup>22</sup> A. G. Hart, *Money, Debt, and Economic Activity* (New York, Prentice-Hall, Inc., 1948), p. 445. Hart also gives a more detailed description of this proposal than can be given in a book of this sort. He draws mainly on the work of Arthur Dahlberg, *When Capital Goes on Strike* (New York, Harper & Brothers, 1933). This book contains the most carefully reasoned and thoroughly worked out analysis of the hoarding-tax scheme in existence.

ties) which are not money. These always bear a rate of interest. The floors discussed earlier keep interest rates on securities from being brought to the levels of those on money, namely, *zero*. A tax on hoarded money would mean that the rate of interest on cash was no longer zero, but was *less* than zero, or negative. In other words, such a tax would create a cost for holding idle cash balances. As a result, a 3 per cent yield on securities which was unattractive to lenders at a zero rate of interest on cash would be worth the equivalent of 4 per cent if a 1 per cent tax were levied on the idle cash balances. Zero and even negative interest rates become possible for certain types of securities under such a scheme. And it would also go a long way toward breaking down the barriers imposed by speculative hoarding. "It would not pay to hold cash for bear speculation (that is, in anticipation of a fall in bond values or rise in interest rates) unless the speculative asset in view was expected to drop in price rapidly enough to balance the" rate at which the value of cash was declining under the pressure of the tax.<sup>23</sup>

The deterrents to hoarding and the effects on interest rates of such a hoarding tax scheme should be clear. Within certain limits, the tax might be made high enough to permit the reduction of interest rates to levels, even negative, necessary to induce a full employment rate of investment. At present, a rate of interest low enough possibly to stimulate an important rate of investment usually finds lenders reluctant, for various reasons already discussed, to lend. But a good deal of this reluctance stems from the costless alternative to lending, *viz.*, hoarding. Attempts by monetary authorities to overcome these hoarding propensities by expanding the money supply are often thwarted by the hoarding of the expanded money supply. Thus liquidity preference drives at once prevent interest rates from falling and keep new funds from entering the loan markets. The suggested hoardings tax would make such activities on the part of the holders of idle balances unprofitable, forcing them to make at least part of their funds available to the capital markets and at interest rates consistent with the going marginal efficiencies of capital.<sup>24</sup>

<sup>23</sup> Hart, *op. cit.*, p. 444. Parenthetical remarks added.

<sup>24</sup> One possible drawback has been noted by G. L. S. Shackle in a review

There appears to be little chance of such a proposal's going over. The scheme is entirely too radical for the conservative thinking of most businessmen and, even, economists. This is true of the latter, surprisingly enough, even though no thoroughgoing objections have been raised against the scheme (as proposed by Dahlberg) on the professional level. If instituted, it obviously would serve as a useful complement to the one major deficiency of 100 per cent money, namely, the lack of control over the velocity of money.

One further suggestion for strengthening the role of monetary policy, particularly in depressions, is in order. With prices falling, bankruptcies rampant, and wholesale pessimism reigning, banks get notoriously cautious about extending new loans. They overwhelmingly doubt the credit worthiness of potential borrowers, and as a result, become too stringent on collateral requirements for loans to individuals and corporations whose credit position is not yet firmly established. Recognition was made of this condition in the United States during the thirties, when the Federal Reserve Banks and Reconstruction Finance Corporation were permitted to lend directly to those individuals and corporations whose financial positions were basically sound, but whose unestablished credit position made the overly pessimistic banks reluctant to lend to them. However, the evidence is that these direct loans never attained significant proportions. Now there are undoubtedly many, many borrowers in the position just described, borrowers whose investments might give a substantial boost, badly needed, to the aggregate rate of investment during depression if their requests for funds were ac-

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of Dahlberg's book in the *Economic Journal* (September, 1938), cited in Fellner, *op. cit.*, p. 187, n. 8. Mr. Shackle asserts that although hoarding will decline under the tax scheme, investment demand will also tend to fall off because profits that were hoarded would also be taxed. Profits which are taxed when hoarded would be worth less than profits whose value remain unchanged if hoarded. However, this argument appears to overlook the fundamental *rationale* of the tax scheme. The scheme assumes that investment is deficient because interest rates are too high and are kept from falling by the hoarding. Hence if interest rates could be lowered as a result of the tax on hoards, there would be considerably less incentive to refrain from reinvesting profits. The boost to consumption such a tax would give would also tend to stimulate investment activity. Moreover, aside from the effects on interest rates and lending, it is evident that such a tax would make hoarding, *per se*, expensive. Unless prices are expected to fall fast enough to at least offset the costs of hoarding, the tax will not provide a direct stimulus to the propensity to consume.

commodated. A very much expanded loan guarantee program of the type the R.F.C. has carried out in the past, or of the types carried out under the loan guarantee programs for veterans in the post-World War II period is in order. Such a program, carried on aggressively, might go a long way toward overcoming the reluctance of banks to lend to would-be borrowers during depressions.

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## CHAPTER 15

### ***FISCAL POLICY AND THE BUSINESS CYCLE***

We have seen that the underlying thesis of monetary policy as a stabilization device is that it can influence the rate of aggregate spending (both on consumption and investment) by varying the degree of *liquidity* of the various groups in the economic community, including banks, business units, and households. By increasing the stock of cash and other liquid assets (short- and long-term government securities) of these groups, and by making borrowing conditions easier through lower interest rates, etc., monetary policy seeks to raise the level of aggregate spending. And by following opposite lines of actions, aimed at reducing the general liquid asset position of the community and making borrowing more costly and difficult, monetary policy seeks to restrict the flow of total expenditures.

Fiscal policy, on the other hand, rests on the thesis that it can influence the total level of aggregate expenditures primarily through changes in the level of individual and corporate *incomes*. The tools of fiscal policy rest, in the main, on the nation's budget. Thus they consist of government revenues, including tax receipts and borrowed funds, and government expenditures, comprising such things as "normal" governmental administrative expenses, capital expenditures (public works), relief expenditures, subsidies of various kinds, etc. It will be seen that, in the first instance at least, government expenditures are income creating and expenditure inducing, while taxes are primarily income and expenditure reducing. Hence the remark that fiscal policy seeks largely to influence aggregate spending by affecting personal and corporate incomes.

It is evident, however, that individual incomes may be in-

fluenced not only by the *level* of government spending and taxing, but also by the *structure* of the tax program and expenditures program. Thus taxes are in any event deflationary, but the same total tax yield may be made more or less deflationary, according as the tax structure is arranged to be more or less consumption or investment (or both) depressing. This is true of expenditures, too. In accordance with the way in which a *given* total expenditures program is arranged, the same total may be made more or less inflationary. The more biased a given total of government outlay is toward high-income groups, the less stimulus it offers to the economy per dollar of expenditure; the more biased the *same total* outlay is in the direction of lower income groups, the greater the stimulating effect on the economy is likely to be.

We have so far omitted one other tool of fiscal policy, an omission which as recently as twenty years ago would have occasioned no concern, but which today is inadmissible. We refer to the national debt. Because of the immensity of its size (in an absolute sense), management of the national debt in most countries has become an integrated tool of fiscal policy. Unlike the above-mentioned tools of fiscal policy, but like the instruments of monetary policy, manipulation of the public debt as such is aimed more at influencing aggregate spending through changes in the liquid asset position of the populace than through changes in its income.

It may be objected that inasmuch as changes in the level of the national debt are the direct product of differences between taxes and expenditures (*i.e.*, deficit or surplus budgets), they actually influence private expenditures by affecting private incomes. While this statement is true, we are construing debt management to refer to the way the debt is handled *after* the decision to change its level is made. Thus if it is decided to reduce the size of the debt, should the banks be paid off first, and if so, the commercial banks or the central banks, or should the nonbank public be repaid first? The effects on the national income of repayment to each of these three groups is different. By the same token, if deficit financing is to be undertaken, should we borrow from the banks or the nonbank public, or should the government issue non-interest bearing debt, that is, simply print the money? Again, the effects on the national



income of these various means of borrowing are different, and it is important to recognize the differences. Each of them has something to say for itself, and under different circumstances, one (or more) may be preferable to the others.

The ensuing discussion will deal first with the manipulation of the national budget in the *aggregate* as a tool of fiscal policy. Then we shall proceed with a discussion of the *structures* of the tax and spendings programs, and, finally, close shop with an analysis of some of the problems of the national debt.

#### BUDGETARY POLICY

Once again, it is necessary to set the philosophical tone of the discussion that follows. We are observing the handling of fiscal (budgetary and debt) policy from the standpoint of what has come to be known as "functional finance." Functional finance is a term used to describe the philosophy that government outlays and revenues (and debt policy) are instruments for maintaining economic stability at full employment of the nation's resources (at, we should add, noninflationary prices). Thus taxes and borrowing should not be viewed as providing governments with the means to finance expenditures. Nor should expenditures be viewed as necessary evils for maintaining the basic functions of government. Rather, taxation should be regarded as a fundamental device for getting money out of people's hands, in order that they spend less. Taxation may also be used to reduce the inequality in the distribution of the national income, either on equity grounds or to raise the level of consumption by taking from the low- (marginal) spending high-income groups and giving to the higher- (marginal) spending low-income groups. By the same token, borrowing should also be regarded as a means for getting money out of people's hands and making them spend less. Or if borrowing takes place from commercial or central banks, it is ostensibly a method for getting more money into people's hands through the medium of government expenditures. The latter in general should be viewed as consisting of various (fiscal) methods for making more money available to household and business groups, to induce greater spending on their part.

The government is never at a loss for funds to spend, for it can resort to the printing of money or borrowing from the central bank on an interest-free basis. In many cases (to be discussed) the government might find it preferable to resort to the printing press. To some people this suggestion will seem utterly shocking. To the more sophisticated, however, who understand the mechanism of bank-credit creation, borrowing from the banks or printing the money differ not one iota from each other, as far as their effects on the stability of the economy are concerned. The printing press becomes merely another device for maintaining economic stability, along with taxation, borrowing, and government spending. It is simply another way of providing the people with spending power during periods of depression. And it is only in such circumstances that resort would be had to it, never in times of full employment or inflation.

The ensuing discussion, then, discards the traditional attitude toward public finance (i.e., fiscal and debt policy) as consisting of the ways and means of financing government. It concerns itself, rather, with the ways and means which the government may employ to maintain a stable economy without inflationary consequences.<sup>1</sup>

### *Passive Budget Policy: Built-in Flexibility*

In the handling of fiscal policy we are constantly confronted with the problem of *timing*; that is, there is always the question of *when* to take action. In addition, there is the problem of *what* to do. Combining the two problems, we may say that the persistent question confronting the fiscal policy administrator(s) is when to do what. In the face of the existing limitations to our knowledge of the behavior of the economy, the time needed to collect information, together with the possibility of conflicts in the information, and the consequent difficulties in forecasting movements in the

<sup>1</sup> For the more conservative-minded reader we offer the suggestion that the level of government activity in the modern economy is so high that it is positively out of the question to ignore the effects on the stability of the economy. This being the case, it is really a short step to attempt to regulate the government's fiscal activities with a view to getting it to contribute a maximum of stability to the economy.

economy with consistent accuracy, there are serious restrictions on our ability to answer the question "when to do what." These limitations put a premium on fiscal devices which provide automatically corrective influences on movements in the national income, employment, etc.

Such corrective influences provide us with a period of leeway during which we can decide just what the nature of the maladjustment is and what appropriate measures are to be taken. They damp the amplitude of fluctuations in national income. And by allowing us time to diagnose the nature of the problem, they lessen the danger of taking *inappropriate* action and hence the danger of the remedies' having a perverse effect on the movements in national income, etc. They give us time, that is, to be sure that the observed movements in the national income are not mere temporary fluctuations, but are major changes induced by movements in what we have called autonomous factors. Otherwise, there would always be the possibility of precipitating the economy into inflation or deflation, depending on how we misjudged the nature of the maladjustment. For example, a very minor recession might be misinterpreted as a major downswing. Plunging into policies designed to provide the economy with expansive forces might bring about a violent inflationary movement, for our assumption of a minor recession means that the autonomous investment factors themselves will quickly provide the force to carry the economy upward again. The combination of these autonomous elements with expansionary fiscal and monetary policies might be just enough to precipitate a violent inflation. A sudden contraction of deficit financing and the like at the first signs of inflationary movements might overestimate the nature of these movements and precipitate the economy into a violent recession.<sup>2</sup> Incidentally, corrective influences also provide forces which will alleviate the effects of incorrect action; at the same time,

<sup>2</sup> The reader will recall that this latter possibility is no mere hypothetical example. This is precisely what happened in 1937. The chances of a repetition of this sequence of events are considerably diminished, both as a result of the experience itself and because the Federal fiscal structure has considerably more built-in flexibility now than it had in the thirties. This latter fact will give us time to make certain the nature of such inflationary price movements as occurred in late 1936 and early 1937.

by providing certain offsetting influences to changes in the national income, they lessen the magnitude of the task confronting fiscal and monetary authorities.

The existence of automatic corrective factors, or, as they are often called, *automatic stabilizers*, within a nation's fiscal and monetary structure is described by the term "built-in flexibility." The essence of built-in flexibility is that (1) with a given set of tax rates, tax yields will vary *directly* with national income; and (2) there are certain lines of government expenditure which tend to vary *inversely* with movements in national income, such as unemployment insurance and farm price-support programs.

A given set of tax rates operates automatically to offset part of the losses in disposable income suffered during periods of declining national income, because individuals whose incomes are cut get a reduction in taxes. The opposite is true in periods of rising national income. Where the tax structure is strongly progressive, the reduction in the tax drain upon incomes is likely to be greater than proportionate to a fall in national income, as individuals shift from higher to lower tax rate brackets under the impact of declining incomes. In similar fashion, the tax drains on incomes increase as a percentage of income during periods of rising national income. Thus a progressive tax structure is just about the best automatic stabilizer we have. This is particularly true if the tax system is put on a pay-as-you-go basis, so that lags are eliminated between changes in the individual's income and changes in his tax drain. The faster the tax drain on an individual's income is reduced in periods of declining national income, the smaller is likely to be the reduction in his spending; in inflationary periods, a quick increase in tax drains will act to reduce the inflationary impact of increased individual expenditures.<sup>3</sup>

Just as taxes provide offsets to changes in disposable incomes

<sup>3</sup> This statement is true as it stands. However, it contains the implicit, and questionable, assumption that private spending is based only on current income. In so far as private spending (particularly consumption) is based also on expectations of future income, employment, and prices, etc., the effects of the tax offsets on private spending may be largely nullified. It should be noted also that automatic stabilizers pose a significant drawback during periods of rising national income from depression, for they serve to retard the upswing by damping private spending.

by varying directly with changes in national income, so certain fields of government expenditure offset changes in incomes by varying inversely with movements in national income. Unemployment compensation programs, for example, cause an immediate increase in government outlays (and an immediate cessation of payments into unemployment reserves by the unemployed) in the form of weekly benefits to the unemployed. Similarly, farm price-support programs call for increased government payments to farmers as soon as prices drop below the support levels. These channels of expenditure also contract during upswings in national income, employment, and prices.

As an aid for gauging the present importance of built-in flexibility in the U.S. Government's budget, the most recent estimates are that present automatic stabilizers will reduce the amplitude of fluctuations in the national income by approximately one-third.<sup>4</sup> This means that for every decline in national income of 1 billion dollars, an increase in the budget deficit (or decline in a budget surplus) of 333.33 million dollars will take place to fill some of the gap in private investment or consumption; a rise in national income of 1 billion dollars immediately induces a decline in the budget deficit (or rise in a budget surplus) also of 333.33 million dollars, providing a partial offset to the effects of an increase in private investment or consumption.

Professor Hart, who has been a pioneer among those advocating the use of automatic stabilizers, has suggested ways for improving the degree of built-in flexibility in the nation's budget.<sup>5</sup> These suggested improvements include such things as:

1. The incorporation into labor contracts of clauses calling for shorter hours before resorting to layoffs. This suggestion arises from the fact that the more people laid off outright, the fewer will be the number of people whose incomes are maintained in part by the reduced tax drains. It obviously does no good to have reduced taxes to pay if one has no income.

<sup>4</sup> Cf. R. A. Musgrave and M. Miller, "Built-in Budget Flexibility," *American Economic Review*, XXXVIII (March, 1948), pp. 122-128.

<sup>5</sup> See A. C. Hart, "Timing and Administering Fiscal Policy; How To Give Relevant Counsel," *American Economic Review*, XXXVIII (May, 1948, supplement), pp. 425-436; see also *idem.*, *Money, Debt, and Economic Activity*, pp. 480-487.

2. Speeding up the time required for tax refunds is the second proposal. Under the present tax set-up, a person who has more withheld from him than he actually owes has to wait till the following spring or summer for his refunds. In times of declining national income, tax refunds could run as high as 3 to 4 billion dollars a year. Hart makes the rather novel suggestion of replacing the present tax exemption system with one in which the taxpayer would receive no exemption, but instead would receive a weekly or monthly family allowance of equal value. Then if the individual lost his job, his taxes would immediately stop, while his exemption allowance refund would continue.
3. Planning of transfer payments to veterans, farmers, etc., should be arranged to provide offsets to losses in income of these groups and so act as automatic stabilizers.
4. The fourth suggestion consists of adoption of a 100 per cent reserve system or one requiring the banks to hold a certain amount of government securities in the manner described earlier. This suggestion of course, is designed to rid the economy of perhaps the most important destabilizer in existence, viz., the perverse elasticity of bank credit, which tends to decline when it shouldn't and often expands beyond tolerable limits.

### *Automatic Stabilizers Are Not a Panacea*

There is a danger that overemphasis on automatic correctives will cause us to lose sight of their limitations. They should be looked upon as very useful instruments of fiscal policy, which, by reducing the amplitude of fluctuations in national income, aid considerably other fiscal devices which have to be employed. Unless future fluctuations in national income turn out to be so small that we can permit them to work themselves out without any intervention, however, the most important offsetting (or compensatory) action must still come from *discretionary* (as opposed to automatic) fiscal and monetary policies. The reason is that automatic stabilizers operate as a partial offset to changes in national income, but provide no force to *reverse* the direction of the change in income. They slow down the rate of decline in national income but contain no means for restoring the income to its former level. Should the national income fall to levels in the future giving rise to (say) ten or more millions of unemployed, it is a brash man who would advocate sole reliance on built-in flexibility, for the best it

could produce would be a stabilization of income at the high unemployment level. Such a situation would be loaded with dynamite. The same would be true in periods of strong inflationary forces. The automatic stabilizers would slow down the rate of upsurge, but little more.

Thus it becomes absolutely necessary to provide ourselves with a tool kit of discretionary policies, consisting of measures for putting into effect, with a minimum of delay, such things as changes in tax rates and changes in government outlays. Such measures call for advanced planning of a shelf of public works projects, providing for administrative discretion to employ them and the funds to put them into effect. They call for means for facilitating changes in tax rates, to rid the economy of the slow, cumbersome procedures through which all fiscal measures must pass before being put into effect. The present procedures permit movements in national income to gain momentum and carry the situation out of the reach of quick and effective action, thereby making the task of recovery or contraction inevitably more difficult and costly (in terms of social as well as economic costs). It is to the problems of discretionary policy and those of devising measures for acting with a minimum of delay that we now turn.

### *Active Budget Policy: Flexible Tax Rates and Expenditures*

There are alternative approaches to the problem of budget manipulation, and each has something to say for itself. These approaches may be described as follows: (1) changing expenditures with constant tax rates; (2) changing tax rates and constant expenditures; (3) a combination of (1) and (2). All three methods of budget management may be used to overcome depression or inflationary situations, and each will be discussed. By way of anticipating our conclusions, we may say that, in general, method (3) is doubtless the most satisfactory, and method (1) is probably superior to (2) during depressions, whereas (2) is probably superior to (1) during inflations.

In ascertaining the effectiveness of these various measures, it will help us in evaluating their relative merits for maintaining economic stability if we focus our attention on the following stra-

logic variables (or, as in some cases, parameters or constants). These are (1) the marginal propensity to consume out of disposable income of the taxed groups; (2) the marginal propensity to consume out of disposable income of the expenditure recipients; (3) the effects of expenditures and taxes on the *position* of the consumption function (relating to *disposable* income) itself; and (4) the effects of taxes and government expenditures on *private* investment, autonomous and induced.<sup>6</sup>

<sup>6</sup> For the mathematically inclined reader (and also the nonmathematically inclined) the following notation of these variables may be helpful:

$$\Delta Y = \Delta E + k(a \Delta E - b \Delta T) + \Delta C(Y) + \Delta I + \Delta \bar{I}$$

where  $\Delta$  (delta) stands for changes (increases or decreases),  $Y$  the national income, and  $E$  government expenditures,  $k$  is the multiplier and is based on the marginal propensity to consume (out of net national product) of a nation as a *whole*,  $a$  is the marginal propensity to consume of expenditure recipients only,  $b$  is the marginal propensity to consume of the taxed groups,  $a$  and  $b$  both relating to disposable income,  $T$  is the tax yield, which may be  $\pm$ ,  $C(Y)$  is the consumption function, of consumption to disposable income,  $I$  is the rate of autonomous private investment, and  $\bar{I}$  is the rate of induced investment.

The expression in parenthesis and its coefficient,  $k$ , indicate that autonomous changes in government expenditures ( $\Delta E$ ) and autonomous changes in taxes ( $\Delta T$ ) exert multiplier effects in precisely the same manner as do shifts in the position of the consumption function and changes in the rate of autonomous investment. Government expenditures may be added to the usual propensity to consume diagram by superimposing the level of expenditures on the usual  $C + I$  curve, in the same manner in which investment is superimposed on the consumption function; the result is a third curve,  $C + I + E$ . As a first approximation, taxes ( $T$ ) may be reflected in such diagrams by shifting the consumption function downward and to the right by a (horizontal) distance equal to the amount of (net) taxation; the resulting curve will be a consumption function relating consumption to *disposable* income, that is, personal income after (net) tax withdrawals. In general, the multiplier effects of a change in government expenditures will tend to be greater than those of a change in taxes. This may be verified roughly by comparing the effects on  $\Delta Y$  in expression (1) of some positive value for  $\Delta E$  and a zero value for  $\Delta T$  with the effects of the same positive value for  $\Delta T$  and a zero value for  $\Delta E$ . For a thoroughgoing exposition of this analysis, see P. A. Samuelson, "The Simple Mathematics of Income Determination," in *Income, Employment, and Public Policy, Essays in Honor of Alvin H. Hansen* (New York, W. W. Norton & Co., Inc., 1948), pp. 133-155; see also R. L. Bishop, "Alternative Expansionist Fiscal Policies: A Diagrammatic Analysis," *ibid.*, pp. 317-340. These articles have the (admitted) weakness of assuming that changes in government expenditures ( $\Delta E$ ) and changes in taxes ( $\Delta T$ ) have no effect on the consumption function and the rate of private investment. Although the results are considerably less elegant, the present writer has tried to take account of these influences in the discussion that follows in the text.



*Changes in Government Spending with Constant Tax Rates*

During periods of depression, unbalancing the budget implies a budget *deficit*, in this case, increasing government outlays while maintaining the structure of tax rates unchanged. To achieve a maximum of effectiveness from its expenditures, the government should finance its deficit by borrowing from the banks, preferably the central bank. There are a number of reasons for this. It is true that borrowing from non-bank groups could be made to provide some stimulus. Stimulating effects would result if the borrowing took place from the rich, who save the bulk of their current incomes, and if the funds from past savings came from idle balances, so that the government spending in effect meant an increase in the income velocity of money. However, there would still be certain damping effects on public spending. The lending public is made less liquid as a result of its substituting securities for cash, leaving it less money available for precautionary and speculative hoarding; such an effect could well damp the propensity to spend (on consumption and investment). Consumption might also be damped to the extent that the government securities were bought with funds intended for current expenditure on consumption. In addition, by drawing on the existing supply of loanable funds, the borrowing operations might reduce this supply generally and exert some upward pressure on interest rates (provided the economy was not yet operating on the perfectly elastic portions of the liquidity preference schedules) and other borrowing conditions, a situation which is certainly not desirable during depression periods.<sup>7</sup>

To the extent that borrowing comes from banks' excess reserves, the government spending can be said to result in an increase in the money supply. However, future bank lending to the private sectors of the economy might be restricted, because the banks, too, would be less liquid, having substituted securities for cash also. To avoid

<sup>7</sup> Some of these damping effects, however, would probably be offset by the increased volume of more liquid and less risky government securities. These permit the public to satisfy its liquidity desires to a certain extent by shifting from less liquid and more risky private securities. This fact, by the way, provides a good illustration of the manner in which Treasury open-market operations can supplement very usefully central bank open-market activities.

any such eventualities, it would seem best to allow the central bank to finance the government spending, or even print the money.<sup>a</sup> Then the spending operations would constitute a net addition to the public's spending power and the banks' lending power, *without* any (direct) offsetting effects on liquidity and private spending elsewhere in the economy. Central bank or printing press financed government expenditures undoubtedly provide the greatest stimulus to a depressed economy.

Borrowing from the banks (central or member) with a constant tax structure permits us to take the consumption function as given. If for the moment we take private investment as constant, the level of income is seen to be a function of the volume of government spending. The rise in national income will necessarily be greater the more progressive is the structure of government *expenditures*, for giving to those income brackets with a relatively high marginal propensity to consume will result in greater multiplier effects.

Lifting the assumption of constant private investment now, a certain amount of private investment may be induced (movements along a rising investment schedule) by the higher levels of income and consumption, and, depending on the extent of unemployment, perhaps the acceleration effect will also make itself felt. At this point, some imponderables come into the picture in connection with the effects on private investment. On the one hand, if the government spending raises businessmen's hopes that the government spending will make short shrift of the depression, the marginal efficiency of capital may rise sufficiently to provide an increase in private investment independent of the immediate effects of rising current spending (public and private). The extent of this upward

<sup>a</sup> The effectiveness of financing expenditures by resorting to the printing press is contingent upon public acceptance of the advisability of such operations. Were this not the case, such an operation could well provide a devastating blow to public confidence, and private spending would be reduced still more. It is necessary to see, though, that resort to the printing press is essentially identical to borrowing from the central bank in its fiscal effects on the economy.

Incidentally, an equivalent alternative to borrowing from the central bank would be a borrowing operation from the commercial banks, or even the non-bank public, with a simultaneous open-market purchase operation by the central bank. However, this turns out to be simply a roundabout way of borrowing directly from the central bank.

shift in the investment *schedule* would depend on the confidence that businessmen had in the success of the government's efforts.

On the other hand, if business is hostile to government spending, fearing perhaps that such activities are a prelude to government interference and competition with private enterprise, private investment will contract. On the whole, this is probably not likely. As long as the government confines its spending activities to fields which are traditionally within the public domain, such as dams and highways, or low-cost housing and family subsidies, and the like, the fear of competition and interference with private enterprise should be at a minimum. Furthermore, insofar as business aims at profits, the government spending, by providing expanded *markets* for sales, both to the government and the recipients of government expenditures, may well cause businessmen to welcome it during depressed periods. It is also true that in recent years businessmen have become somewhat accustomed to a broadly expanded area of government activity and spending. This fact, together with a knowledge that such activity is strictly of the stabilization variety, should largely overcome unfounded fears.<sup>9</sup> Such statements may sound unduly optimistic; since they are strictly conjectural judgments, however, the reader is free to form his own judgments.

While there are no offsetting effects on private spending because of higher tax *rates*, a certain amount of damping to private spending results from the higher tax *yields* which develop as a result of the higher national income. This is an automatic stabilizing effect which, in times of deep depression, especially, may be highly undesirable. Higher tax yields reduce the disposable income of the private sector of the economy and act as partial offsets to the government spending programs. It is partly for this reason that a reduction in tax *rates* is desirable at the same time expenditures are increased, desirable, that is, if a maximum of stimulus is to be derived from the government expenditures at the moment. Longer run considera-

<sup>9</sup> This point emphasizes one of the advantages of advanced planning of government spending programs, etc., for depressions. Planning would acquaint the businessman in advance with the type of government activity to be employed and emphasize the purposes of this activity. Having the programs discussed in advance in the legislatures and other public forums would help clear the air of much of the uncertainty and fear.

tions, in connection with the national debt, may make it seem better to refrain from lowering tax rates. If this is the case, then we have another argument for resort to interest-free borrowing, that is, the printing press or its equivalent. If government deficit spending is thought to be desirable, it would also seem wise to try to achieve a maximum of effectiveness from the expenditures. The possibility of overexpanding the liquidity of the (non-bank and bank) public, however, makes it well advised to confine such operations to runaway deflations or deep depressions. Otherwise, there is the danger of turning a rather limited downswing into a violent inflationary movement.

During periods of *inflation*, unbalancing the budget implies a budget *surplus*, in the case under discussion, curtailing government outlays while maintaining the structure of tax rates unchanged. The reverse of the operations just discussed is called for during inflation periods. The government should utilize the budget surplus to retire outstanding government debt, and perhaps convert part of its short-term debt into long-term debt, with a view to lessening the liquidity of that part of the *total* debt which is not retired. Retirement of central bank-held debt would provide by far the greatest deflationary influence, retirement of commercial bank-held debt would be next in effectiveness, that of non-bank-held debt least effective, in fact, *inflationary*.

Retirement of non-bank-held debt would mean giving the non-bank public cash in exchange for securities, an act which obviously builds up their liquid cash position and provides a stimulus to increased consumption and investment by the various elements of the non-bank public. Paying off debt held by the commercial banks would be deflationary, in the first instance, at least, because it would serve to reduce the volume of outstanding demand deposits. While the absolute reserve position of the banks would be unchanged, the ratio of reserves to deposits would rise; in other words, excess reserves would develop. The worst that could happen would be for the public to borrow again from the banks and induce an expansion of demand deposits to the level prevailing before the debt retirement.

It is the retirement of central bank-held debt or, alternatively,

the piling up of Treasury cash surpluses in Treasury accounts at the central bank, that would provide the greatest deflationary force. Taxing the public and hoarding the proceeds or using them to retire debt held by the central bank not only contracts the volume of demand deposits, but also reduces the amount of bank reserves. Unless the banks offset these effects by borrowing from or selling securities to the central bank, the decline in their reserves will serve to reduce further their ability to lend. A general tightening of credit conditions may be expected. Debt retirement operations are an obviously useful supplement to central bank open-market sales during inflationary periods. The actions together exert a double-barreled effect on bank reserves.

As before, the assumption of an unchanged tax structure implies a constant consumption function. The multiplier effects of the reduced government outlays will be greater the higher the MPC of the affected groups. Private investment may also somewhat fall, not only because of the fall in national income, but also because of the pressure of capital rationing resorted to by the banks, who, having their reserves depleted, will begin to restrict lending operations to established customers. At the very least, the effects of the debt retirement program on bank reserves should severely damp the expansion of further investment activity, provided, of course, it is the *central bank* whose holdings of government securities are reduced. As we have already indicated, the full effectiveness of these fiscal operations as a damper to public borrowing and spending is contingent on how well the banks are kept from replenishing their reserves through the sale of securities to and borrowing from the central bank.

In the presence of a constant tax structure, the deflationary effects of a decline in national income will be offset somewhat by a decline in tax yields. Lower taxes limit the fall in disposable income of the private sector of the economy and thus diminish somewhat the effectiveness of the government stabilizing actions. In the event that the inflation assumes dangerous proportions, it is desirable to raise the level of tax rates at the same time government expenditures are curtailed and debt-retirement operations are undertaken. The multiplier effects of the increase in tax rates would

supplement those of the decreased expenditures. See footnote 6 above.

However, it is always necessary to exercise caution in pursuing anti-inflationary fiscal policies, lest the inflation be converted into a violent deflation and contraction. Fiscal policy is not free of the forecasting and timing pitfalls which beset monetary policy, and it is therefore necessary that care be exercised to avoid "overdoing a good thing." Nevertheless, there is considerably less danger of turning inflations into deflations with the use of fiscal tools than there is with the use of monetary policy instruments.

Monetary tools are both very blunt and indirect. They affect all banks indiscriminately. Moreover, they affect public spending only indirectly by affecting the public's liquidity position. In inflation, as well as depression, there is no certainty at all as to how the public will respond to changes in its liquid asset position. In order to be effective, monetary policy may have to go to extremes in its efforts to curtail the rate of private spending. Vigorous open-market operations and credit restrictions aimed at raising interest rates, reducing liquidity, and a general tightening of credit conditions may succeed too well. These actions may precipitate a collapse in the securities markets such as to shatter public confidence. Actions designed to prevent prices from continuing to rise or to effect a decline in them may lead to the belief of a widespread series of price readjustments, and this, in turn, to a wave of deferred buying and hoarding in anticipation of the price declines. The result could easily be a disastrous deflation, completely beyond the control of the monetary authorities.

Fiscal tools are smoother and more gentle in effect, and they are *direct*. A Treasury budget surplus, brought about by a cut in government outlays and possibly a rise in the tax rates, cuts into public spending in a continuous way, not in a sudden, jerky fashion. It does not have to resort to the indirect effects of changes in liquidity. It gets at consumer spending immediately by reducing the disposable income (income after personal taxes) of the public. This will be the more true the greater the emphasis placed on personal income taxation. Corporate taxes, too, by eating into corporate savings, the major source of investment funds in manu-

facturing industries, and into margins of return allowed for risk, will impinge on private investment, not an undesirable result in inflationary periods. There is much less need, when such tools are used, to resort to monetary tools to such an extent as to invite disastrous consequences in the securities markets and other broad market areas.

### *Changes in Tax Rates with Constant Government Spending*

In contrast with the type of unbalanced budget just discussed is one in which the government holds its level of spending constant and varies its tax rates. An unbalanced budget during depressions implies deficit spending, as before, but now the deficit is brought about by a reduction in tax rates. However, even though the government does not increase its expenditures in the present case, the arguments for financing those expenditures which are maintained by borrowing from the banks, preferably the central bank, still hold and on precisely the same grounds as before. There is no need, therefore, to repeat this phase of the discussion.

As we have noted, tax reductions have multiplier effects on national income just as increments in government outlays do. *Ceteris paribus*, the size of the tax multiplier (which is equal to the marginal propensity to consume out of disposable income of the taxed groups times the national income multiplier—see footnote 6 above) is less than that of the expenditures multiplier. However, other things, namely, the consumption and investment functions, are not always equal, as we shall now see.

Unlike the previous case, we can take only the level of government spending as given, for the propensity to consume is bound to be affected by the change in the tax structure. In fact, the tax reduction called for during depressions may actually push the propensity to consume *downward* sufficiently to play havoc with the expansive effects deriving from the budget deficit. Given a progressive tax structure, this is almost bound to be the case. If the reduction in tax rates is to be very stimulating, it must take place on a rather sweeping basis. Under these circumstances the high-income, low marginal spending, groups would almost inevitably benefit to a very important extent. The result is that the reduction

of taxes stands a good chance of stimulating consumption much less than savings.

An important exception to the argument that reduced taxes may depress the consumption function too much is provided by the case where the level of the entire tax structure is very high to begin with. In this case the reduction in tax rates, particularly if concentrated at the lower tax brackets, will be likely to stimulate consumption more than savings, inducing an expansion in consumption under the impetus of a somewhat higher propensity to consume. However, the case of a very high level of tax rates must be taken to be exceptional. Extremely high-level tax structures appear to be confined to war economies, when the government is by and large the chief spender.

Reductions in tax rates will undoubtedly provide a stimulus to private investment, which we have ignored until now. This will be particularly true if the initial tax rates were high. High taxes impinge directly on the margins allowed for risk in contemplated investment projects and therefore reduce the incentives for risk bearing. High corporate taxes remove the most important source of venture capital, namely, the reinvested earnings of corporations. However, if improvements in the tax structure, to be discussed shortly, were made, and many are now under consideration, much of the difficulty associated even with high taxes would be removed. For example, a better definition of the tax base, to allow for the offset of losses against gains, and perhaps less emphasis on corporate income taxation and more on personal income taxes and spendings taxes would eliminate many of the problems created by high taxes. With such improvements, the stimulus to private investment provided by lower taxes would be greatly reduced.

But it is absolutely necessary that private investment be sharply stimulated by the tax reductions. We have seen that they are likely to stimulate savings, and if the government deficit were to be financed only from the increment in savings (or its equivalent, *viz.*, bank credit), the implication would be that the consumption function had declined enough to cancel out completely the effects of the deficit.

In the event of inflation, the case for this type of unbalanced



budget is considerably strengthened. Raising the level of an already progressive tax structure would throw much of the burden of the increase on the lower income brackets, definitely exerting a downward pressure on the consumption function. In addition, the high taxes are bound to act as a damper on private investment, by impinging on the (marginal) reward for risk bearing, etc. But during inflationary periods, these effects are highly desirable, for the best anti-inflationary policy is that which succeeds in reducing the aggregate propensity to spend (on consumption and investment). The problems of handling the Treasury's cash surplus in inflationary periods are in this case precisely like those discussed in the earlier case of constant tax rates with changing expenditures.

*A Comparison of the Merits of the Two Previous Cases of Unbalanced Budgets*

On the whole, it is probably not an exaggeration to say that *ceteris paribus*, during depressions, a policy of unbalancing the budget by increasing expenditures in the face of constant tax rates is more effective than the opposite policy; during inflations, the case for raising tax rates in the face of constant government outlays would seem to be a more effective anti-inflationary policy than its opposite. In making this assertion, we abstract from the problems and effects of deficit and surplus finance on the grounds that they are the same under both cases, with one potentially important exception. This exception is that the first type of policy is likely to entail a much smaller budget deficit during depressions because it does not at all impinge on consumption, and, of dubious advantage, because the higher national income resulting from the government expenditures increases the yields from existing tax rates. Reductions in taxation give the larger budget deficits during depressions, for their multiplier effects are less than those of government expenditures, and they also reduce the community's propensity to consume; at the same time they may occupy a longer period of time to stimulate the economy toward upward employment.

During periods of inflation, cuts in government spending alone are likely to yield larger budget surpluses than the policy of raising

tax rates only, for the former will put virtually no pressure on the consumption and investment functions, while the effects of the latter are solely in these directions. Surprisingly enough, a large budget surplus is not necessarily the hallmark of successful anti-inflationary policy. For large surpluses indicate that the national income is still running at very high levels, that perhaps the anti-inflation measures have not been too successful. High tax rates, on the other hand, with their pressures on consumption and investment, are likely to exert a much stronger damping influence on national income, with the result that budget surpluses may not be as great as they are in the first case; yet this fact would indicate that the higher tax policies were successful in overcoming the inflationary forces.

In evaluating the merits of the two types of approach to unbalanced budgets, we should keep our attention focused on the effect of the two policies on consumption and on investment.

*Effects on Consumption.* As we have indicated, one of the crucial points in the analysis of the alternative budget policies is the effect of each on the consumption function. If the effect is such as to curtail savings as the national income is increased, then an expansion of the latter will be more easily induced during depressions; if the effect is to increase savings as the national income is reduced, it will be easier to overcome inflationary movements. But if consumption is impinged upon as income rises, the deficit will have to be greater and the period required for getting the economy out of the doldrums possibly longer; by the same token, the policy impinging on consumption least will also be the least effective in fighting inflations.

There is no doubt whatever that the policy calling for constant tax rates and increased expenditures will be the most stimulating to consumption. It leaves the consumption *function* unchanged but induces a higher level of consumption as a result of higher national income. Given a highly progressive tax structure, a reduction in rates is bound to benefit most those income groups who do the large part of the saving, thus lowering the position of the propensity to consume. Moreover, if the expenditures take the

form of an actual government demand for goods and services, the government outlays immediately add to the national income. A reduction in tax liabilities, while it makes more money *available* for spending does not ensure that all the money will actually be spent. In fact, unless the marginal propensity to consume of the taxpayers involved is equal to one, a most unlikely possibility, this will not be the case. Of course, the same will be true of those categories of government expenditures that we call *transfer* payments (i.e., payments which do not reflect an equivalent amount of goods and services received, such as relief payments, social security outlays, etc.). Nevertheless, there is every reason to believe that the amount of respending out of transfer payments will be much greater than the amount out of tax reductions. For the marginal propensity to consume of the recipients of transfer payments (as well as recipients of government investment) is almost sure to be greater than that of the benefited taxpayers. All these facts indicate that the *multiplier* effects of the budget deficit are certain to be greater in the case of increased government spending than in the case of reduced tax rates.

Furthermore, government outlays on goods and services affect the national income in the same period in which they are spent, while tax reductions, and also transfer payments, affect the income stream only after a lag. In addition, the period of time we have called the multiplier period (the time interval between the receipt of new income and the respending of it on consumption) is apt to be shorter in the case of increased government outlays than in that of reduced tax rates, because the average lag between the receipt and respending of new income is greater for nonwage groups (the principal beneficiaries of tax reductions) than for wage groups, the principal beneficiaries of public expenditures.<sup>10</sup>

Of course, the same arguments hold for inflation periods, but they do not all favor the expenditure reduction method vis-à-vis

<sup>10</sup> The points made about lags and multiplier periods are due to Benjamin Higgins, "Timing and Administering Fiscal Policy"—Discussion, *American Economic Review*, XXXVIII (May, 1948, supplement), p. 444. The lag in the effects of tax reductions (and increases) is considerably diminished by pay-as-you-go tax systems and could be diminished further by a better refund system.

the tax increase method. In particular is this true of the effects on the consumption function of the alternative budgetary approaches. Cuts in government spending will leave the consumption function unchanged, while rises in tax rates will certainly push it downward. In real inflationary situations, it is the latter which may be the more desirable. This advantage of tax rate increases during inflations may outweigh their disadvantages resulting from the smaller multiplier effects of the tax increases themselves, and longer lags and multiplier periods, particularly since the pay-as-you-go income tax systems have removed a good bit of the lag in "tax effects."<sup>11</sup>

The significance of the effects of shifts in the consumption function requires additional comment at this point. Changes in the position of the propensity to consume, we have seen, are analogous in their effects on national income to changes in (*autonomous*) investment. That is, they both give rise to multiplier effects, the product of successive respondings. Shifts in the investment schedule, it will be remembered, give rise to higher levels of national income. The higher levels of income induce increased consumption, which is the basis of the multiplier effects. We have also observed that shifts in the consumption function give rise to changes in the income level. Changes in the income level brought about by shifts in the consumption function induce further changes in consumption in precisely the same manner as do shifts in autonomous investment. And the (consumption function) induced changes in consumption create multiplier effects exactly like those brought about by the changes in autonomous investment.

This discussion emphasizes the importance of shifts in the consumption function due to changes in tax rates. Reductions in tax rates in depression periods (when the tax structure is highly progressive at the outset) not only reduce consumption because of the downward movement in the function, but also because of the multiplier effects which this shift in the function itself induces. These results are dangerous for an economy whose income is already

<sup>11</sup> As a matter of fact, the only lag that still exists with the pay-as-you-go personal income tax systems is associated with refunds. Since in inflation we are not interested in the problem of refunds, the problem of lags in the effects of tax increases is nonexistent.

depressed. But the same depressive effects on the consumption functions of higher levels of tax rates during inflation periods provide us with a sharp weapon for combating the inflationary forces.

*Effects on Investment.* The effects on private investment of the two types of budget policy are filled with considerably more uncertainty than the corresponding effects on consumption. In periods of depression, the policy of increasing government outlays alone, insofar as it leads to higher levels of income may also result in a certain amount of induced investment, depending on the extent of excess capacity. On the negative side stands the possible effects an increased volume of government activity might have on business confidence. We have already indicated the various possibilities. On the whole, if government activity is confined to spheres which lie traditionally outside the domain of private enterprise, it is likely that businessmen's confidence will be stimulated rather than depressed by the greater volume of sales induced by the government expenditures. As one writer has put it, in a free enterprise society "the cash register calls the tune," and higher profits or smaller losses should act as a bracer to down-in-the-mouth businessmen.

Much less uncertain is the fact that strong reductions in tax rates would spur investment. High progressive tax rates act as a deterrent to new investment via the adverse effect they have on the incentive to bear risk. They reduce the margins which are normally allowed for risk in computing the marginal efficiency of capital. More directly, they reduce the profit rate on investment. And with a progressive tax structure, there tend to be relatively high rates on marginal incomes. Moreover, high tax rates may actually *increase* risk by eating into liquid cash balances held for emergency purposes. This works particularly to the detriment of small and new firms, because of their limited access to the capital funds market, a factor which puts a premium on liquid cash for the small and new firm.

A progressive income tax structure, particularly one on *business* incomes, also tends to discriminate against risky investments, insofar as potential gains fall into higher rate brackets than potential losses.

A business which is taxed at the same rate whether it gains or loses on an investment, in effect, shares equally both its gains and losses with the government. But if gains result in a firm's being taxed at higher rates than would be the case in the face of losses, it shares its profits more than its losses.<sup>12</sup> A progressive tax reduces the incentive to undertake risky ventures when it confronts potential investors with the proposition of paying much of their gains in the form of taxes without being able to save a similar amount in taxes if the venture fizzles.

Thus reductions in tax rates during depressions would tend to stimulate investment. However, certain comments are in order. If taxes on *business* incomes were considerably reduced and their progressiveness abandoned in favor of greater emphasis on personal income taxes, and certain other changes, to be discussed, were made, it is likely that tax reductions would then stimulate investment considerably less than they would depress consumption. There is strong reason to believe that progressive personal income taxes exert a great deal less depressive effect on investment than do the same type of taxes on business incomes.<sup>11</sup>

During periods of inflation, the case for increases in tax rates is virtually unassailable. As we have repeatedly indicated, they will tend to damp both investment and consumption, and during times of strong inflationary pressures, this is exactly what is desired.

<sup>12</sup> This may be illustrated with the following example: Suppose tax rates called for a 10 per cent tax on corporate incomes between \$10,000 and \$20,000, and a particular firm earns \$15,000 a year. Its tax would then be \$1,500. If it undertook an investment yielding a \$5,000 net gain, so that it went to \$20,000 level, it would be taxed \$2,000, an increase of \$500. If the firm lost \$5,000, however, so that it fell to the \$10,000 level, it would be taxed \$1,000, a decline of \$500. With a constant tax rate, the government shares in profits and losses equally. Now suppose the tax were 20 per cent at the \$20,000 level and 10 per cent at the \$10,000 level. The same \$5,000 gain would raise taxes by \$1,000, while the \$5,000 loss would reduce taxes only by \$500.

<sup>18</sup> Of course, when taxes are very high, as they are at present, they undoubtedly damp both consumption and investment. In this case, a reduction in tax rates all around is likely to stimulate both variables, particularly if care is taken to retain, or even increase, the progressiveness in the *personal* income tax structure. Tax rates as high as they are today must be taken to be exceptional, the product of a military economy or a peacetime economy confronted with severe inflationary pressures.

For inflations are normally characterized by excessive consumption and investment, particularly the latter.<sup>14</sup>

### *Flexible Tax Rates and Flexible Public Expenditures*

The reader may have inferred by this time, from the tone of the preceding discussion, that the present writer would advocate a policy of economic stabilization that permitted *both* flexible tax rates and government spending. Used together, they can complement each other in their respective effects on the economy. Used separately, they often serve to offset the effects of each other. In certain situations one used alone is simply insufficient.

Thus if tax rates are maintained unchanged during depressions, they permit rising tax yields during a period when the government is spending in an effort to provide a stimulus to the economy. There is little sense in spending money on the one hand to increase the public's spending power and allowing rising tax yields to limit the increase in disposable income, on the other.

Reducing government expenditures only during periods of inflation is also likely to be insufficient. Assuming they are not induced by unavoidable government spending, inflations are characterized by excessive private spending, particularly by excessively high rates of investment. Given the inflationary situation, a decline in public spending is likely to be offset to some extent by a rise in private investment, for the inflationary situation is indicative of a plethora of inducements to private investment. Moreover, it may not always be possible to reduce public spending.

A rise in tax rates, however, impinges directly on the consumption function and the level of private investment, pushing both down, for reasons we have already discussed. They thus supplement the cuts in public spending when efforts are made to overcome severe inflationary pressures. And, of course, in periods when the overall rate of government spending cannot be curtailed, periods like those of the past few "cold" and "hot" war years, in-

<sup>14</sup> However, there is a danger that if inflationary pressures are strong enough, the rise in tax rates might have to proceed to a level that could well damp production incentives. Such an effect would tend to add to the inflationary forces. In this case, resort to a compulsory savings plan would be in order, as a substitute for (too) high tax rates.

creases in tax rates provide the only really powerful weapon at the disposal of the Federal Government, unless resort is had to policies such as compulsory saving.

During depressions, a reduction in tax rates alone is likely to be ineffective. The experience of the thirties lends some support to this statement. Despite the seeming great increase in Federal expenditures during this period, much of this increase served primarily to offset the sharp decline in state and local outlays, so that the actual *net* increase in *aggregate* government expenditures amounted only to a little over 1 billion dollars a year. Tax rates were sharply reduced during this period. In spite of this, the country remained in more or less of a depressed state for most of the decade. One important reason for this we have already suggested. This is that a reduction in tax rates alone will stimulate savings to a large extent, particularly if the tax structure is progressive and the rates are not very high (relative to national income) to begin with. When consumption sales continue to remain low, businessmen can hardly be expected to increase their investment to any significant degree (in the absence of sufficient *autonomous* inducements to invest, which deficiency is precisely the origin of most depressions). Public expenditures, on the other hand, immediately create a demand for goods and services, and, in addition, get into the hands primarily of high marginal spending, wage groups. Nevertheless, there is no reason why a reduction in tax rates concentrated on business taxes and the low brackets of the personal income tax structure should not be made to take advantage of whatever stimulus to private spending it will provide. Such action will also avoid the deflationary effects of a rise in tax *yields* that would develop if tax *rates* were held constant as government outlays were expanded.

The situation is reversed in prosperity. A rise in tax rates alone can be made sufficiently effective to put the brakes on private spending. It would be senseless, however, to avoid a reduction in government spending, when such a reduction is possible. Unless unavoidable, the government outlays are a needless inflationary force. There may even be times when, although inflationary pressures exist, they are not sufficiently strong to warrant a broad in-



crease in tax rates; put differently, there may be a danger that a rise in tax rates would throw the economy into a tailspin. In this case, a reduction in government spending alone, with constant tax rates, may provide enough of a deflationary influence. At all events, flexible tax rates and government expenditures should always be *available* to supplement one another.<sup>15</sup>

### *Budget Deficits in Inflationary Situations*

Of particular pertinence at the moment is the possibility of having the central government operate with a budget deficit at a time when the economy is operating at full employment and filled with potential inflationary pressures. The conditions most likely to lead to this situation grow out of the necessity of building up a nation's state of military strength and preparedness, so that the budget deficit may be traced in the main to large-scale military expenditures. Of course, as much of the government spending as possible should be financed from taxes; higher tax rates are clearly in order. Higher tax rates have their limits, however. At some point (the exact determination of which is more a problem in sociology than economics), higher taxes impinge undesirably on private investment and individual effort needed for war production. The quest for profits and higher wages still provides the *Leitmotive* in our economy, even in war or "semiwar" years.

As an important concession to the factor of incentive, then, an upper limit is placed on tax rates. If a deficit continues to exist,

<sup>15</sup> Mention might be made of the possibility of the use of balanced budgets as a stabilizing device. However, their usefulness is rather confined to the field of theoretical possibilities. In times of major depression, balanced budgets would call for an increase in government outlays and the increase in taxes necessary to keep the budget in balance. While it may be shown that even when the budget is balanced, government expenditures are income-generating, it is clear that the volume of government spending would have to be enormous by any standards, because it would have to compensate for the continuous damping effects of the higher taxes on consumption and private investment. In times of inflation, balancing the budget would call for tax rate reductions if government expenditures were curtailed, hardly an intelligent anti-inflationary maneuver. For good discussions of the income-inducing effects of balanced budgets, see H. C. Wallich, "Income Generating Effects of a Balanced Budget," *Quarterly Journal of Economics*, XLIX (November, 1944), pp. 78-91; and T. Haavelmo, "Multiplier Effects of a Balanced Budget," *Econometrica*, XIII (October, 1945), pp. 311-318.

then resort must be had to borrowing. It is axiomatic that, as much as possible, the borrowing should take place from the non-bank public. Like taxes, borrowing from nonbank groups makes it possible to finance the government outlays without creating additional inflationary pressures in the economy. Again, however, there are limits to the ability of the government to persuade the people to buy war bonds. If a budget deficit continues to prevail, then recourse must be had to bank borrowing, for nothing can be allowed to interfere with the prosecution of a war effort or a military preparedness program in times of danger. If the situation continues over a prolonged period, it is necessary for the central bank to engage in open-market purchases, to lower reserve requirements, and the like, in order to make it possible for the banks to continue to purchase government securities. At the same time, Treasury and central bank support of the government security market may develop to keep the interest costs on war borrowing low and to assure the (bank and nonbank) public of the absolute liquidity of government securities, a measure designed to enhance salability of the latter.

The net result of bank borrowing and support of the government securities market is patently to expand in large proportions the liquidity of the public. This liquidity creates a potentially devastating inflationary force. As most readers are aware, the next step is recourse to the direct controls of price ceilings and allocation and rationing programs, for the exigencies of war finance greatly reduce the power of monetary and fiscal devices as restraining controls. Except for taxes, their usefulness often turns out to be ways of actually increasing the liquidity of the public as a spur to greater productive effort.

#### THE NEED FOR IMPROVEMENT IN THE FISCAL STRUCTURE OF THE UNITED STATES

At present in the United States there is a distinct lack of an adequate mechanism for effecting prompt adjustments *both* in tax rates and in public expenditures. In the former case, the problem may be traced to the extreme cumbersomeness in the legislative process for effecting tax rate changes. In the latter case, getting

flexibility is a matter of continuous advance planning for a reserve shelf of (varied) investment projects, plus getting the Congress to agree in advance on the total amount of public spending at different levels of income and to provide itself with a mechanism for making funds quickly available.

At the same time, there is a crying need for a drastic overhauling of the Federal tax *structure*. As presently constituted, it tends to damp consumption and investment, primarily because of the tendency to rely too much on taxes other than personal income taxes and because of failure to permit adequate loss offsets.

In the following pages we shall examine various ways for achieving greater adjustability in tax rates and public expenditures to changes in national income and various suggestions for improving the structure of the tax system.

### ***Adjustability of Tax Rates and Public Expenditures to Changes in National Income***

*Tax rate adjustments* in the United States today normally require anywhere from a half year to a full year or more to be put into effect. It is clear that if tax adjustments were to be an effective stabilizing weapon in the face of such time-consuming procedures, very accurate forecasting would be necessary so that new tax bills could be presented to the Congress well in advance of prospective changes in the national income. It should also be clear that, given our weak forecasting techniques, this is not the proper approach to the use of a fiscal device aimed at aiding in the achievement of economic stability. Under the present setup, economic fluctuations are allowed to proceed too far before the appropriate tax adjustments are made.

As we noted earlier, the war-instituted pay-as-you-go tax system has been of immeasurable aid in enhancing the automatic stabilizing effects of personal income taxes. A major portion (almost three quarters) of our income taxes is now collected in this way. The withholding system, however, also offers the administrative facilities for putting into working operation quick changes in tax rates. All that is necessary is advance enactment of tax schedules for different rate structures that correspond to various income levels.

These should be made available for prompt distribution to employers involved in the withholding system. In this way changes in tax rates could be put into effect within a period of a couple of weeks. The importance of achieving flexible personal income tax rates, particularly in the very low tax brackets, may be seen in estimates that 10 per cent variations in tax rates at the lowest bracket will result in variations in consumption expenditure of as much as 3 billion or more dollars (under the present income tax structure).

The big obstacle, of course, is obtaining congressional approval of a system which will enable the changes in tax rates to be put into effect promptly and on comparatively short notice. Numerous suggestions have been made for improving the present legislative scheme of things.

One suggestion provides for the establishment of an automatic yardstick system, whereby the Congress would establish a program providing for automatic changes in tax rates (on a preestablished basis, of course), with the system geared to some index of employment, prices, or national income.

Another proposal would grant the President authority to change tax rates, on the basis of previously agreed upon employment or income, etc., index series, with the President's action subject to congressional veto. This proposal is modeled after the practice pursued in the Reorganization Act of 1945, providing for reorganization of the administrative structure of the Executive Branch of the government.

A third proposal would have the Congress itself plan in advance a system of alternative tax schedules to be placed in effect when economic conditions warranted. Again, some series of economic indicators would be employed, and when the Congress was advised that the indicators had reached a particular level, it would pass a joint or concurrent resolution calling for the institution of one of the preplanned tax schedules.

A fourth proposal, modeled after the arrangement under which the Federal Reserve System operates, would have the Congress grant broad powers for Executive action subject to certain rules and limitations imposed by the Congress. Thus the President might be granted authority to change tax rates only within certain ranges

around a set of "standard" rates established by the Congress, in a manner analogous to the limits within which the Federal Reserve System's Board of Governors may alter reserve requirements.

Unless Congress rather suddenly undergoes a sharp change of attitude, it would appear that proposals one and four have small chance of adoption. In the light of Congress' extreme jealousy concerning its prerogatives in connection with tax legislation, the best that can be hoped for is the adoption of proposals two or three. Still, if established on an adequate basis, a system of tripping off a set of preplanned tax schedules has much to be said for it. At the very least, it would be a vast improvement on the present slow, cumbersome set-up. It remains to be seen whether the Congress can be convinced of the importance of abandoning its traditional approach to tax legislation in favor of one adapted to a general policy of economic stabilization.

*Flexibility in public expenditures* offers a bit more difficulty in attainment than perhaps is the case with tax rate flexibility. If the political and legislative obstacle can be surmounted, the problem of tax adjustability is virtually solved, for the administrative and technical problems are not too involved. However, this is less true of government spending. The administrative and technical problems offer great difficulties in addition to the political and legislative problems in this case.

The legislative problem in connection with government expenditures is much the same as that discussed in connection with tax rates. If facile adjustability is to be achieved, it is inconceivable that Congress should have to approve every line of government expenditure. Advance planning, on a continuous basis is necessary to build up and maintain a shelf of heavy and light public works projects, together with an adequate system of counter-cyclical transfer payments (relief payments, veterans and family subsidies, state and local grants-in-aid, etc.). Presumably, some automatic plan, like that of proposals two and three described under the tax rate discussion, is mandatory. The Congress should provide for the machinery to plan and put into effect various lines of public expenditures. A program might be established whereby government spending would automatically change to different preplanned levels

on the basis of certain agreed upon values of official economic indexes.<sup>16</sup> Within the limits of standards established by Congress, it would probably be necessary to grant rather wide administrative discretion to the Executive branch as regards the choice of lines of expenditure. For example, the Congress might establish that at certain levels of national income light types of planned public works projects should be activated, at lower levels sharp increases in transfer payments should take place, at still lower levels heavy public works projects should be initiated and so forth. But it would have to leave to administrative discretion the exact choice of most of the particular lines of spending within the framework thus established, with the exception perhaps of such socially significant projects as a Missouri Valley Authority. It is a matter of conjecture whether the Congress will be willing to grant even this much loss of control over the Federal purse strings.

Further problems arise in connection with the ease or difficulty with which these various channels of expenditure may be started and halted. As far as transfer payments are concerned, this problem is at a minimum; given the *will*, these can be instituted and stopped on comparatively short notice.<sup>17</sup> However, a problem is created by the fact that many public works programs are of high social priority and, therefore, not easily postponable. The expansion of educational facilities and the like often cannot be made to fit neatly into stabilization policy; the same is obviously true of

<sup>16</sup> Because of the weaknesses in our forecasting ability, it is necessary, both in the case of public expenditures and tax rate changes, to allow some short time interval to elapse before putting into effect changes in tax rates or public outlays. Thus it might be provided that the official economic indicators record certain values for a period of (say) three months before tax rates or public expenditures (aside from those mentioned as automatic stabilizers) were changed. Such a provision is necessary to reduce the chance of errors in forecasting, to ensure that changes made do not inadvertently lead either to inflations or deflations. The provision should apply both to periods of upswing and downswing. In this way care would be taken that public spending would not be curtailed and taxes raised too soon in the former periods nor increased and lowered, respectively, in the latter periods.

<sup>17</sup> The most interesting and comprehensive of the transfer payment schemes which have come to the writer's attention is to be found in J. H. G. Pierson, *Full Employment and Free Enterprise* (Washington, Public Affairs Press, 1947), pp. 35-73. Pierson's scheme in effect provides for a contracyclical system of family subsidies designed to ensure certain levels of aggregate consumer demand.

military and foreign aid programs, as the experience of the past few years and the present have taught. Projects of these types are not of the postponable and "shelving" variety.

Moreover, there is a large class of so-called heavy type investment such as river valley and rural development programs, projects which require long planning periods and are beset with engineering problems. If the Congress can be persuaded of the necessity for providing the administrative machinery and funds to provide this planning in advance, however, much of the problem of planning can be overcome. A larger difficulty presents itself in the form of the length of the construction period required for these heavy type projects. Aside from projects whose social importance demands that they be begun as soon as the need for them becomes apparent, there is little problem in timing their starts. The real problem arises in timing their *completions*. The bulk of the large-scale development programs like the type mentioned require many years to be brought to fulfillment. Thus the strong probability arises of starting these projects in times of depressions and being confronted with the necessity of completing them in times of prosperity, when, from the fiscal point of view, they constitute only a severe inflationary influence. Nevertheless, discontinuance would mean total financial loss. This characteristic of heavy investment projects makes it necessary that they be started in periods of deep and potentially long depressions and be of sufficiently high social priority to warrant being started and brought to fruition as quickly as possible, even in periods of boom.

Because of this lack of adjustability of many public investment projects, either because of their social significance or their long-term construction periods, many writers have despaired of using public works projects as an important stabilization tool. However, Professor Benjamin Higgins, who has probably devoted more time than anyone else to the detailed study of the complexities of public works programming, remains firmly convinced that, given adequate advance planning, they can be employed with good results in a program of economic stabilization.<sup>18</sup>

<sup>18</sup> See B. Higgins, *Public Investment and Full Employment* (Montreal, International Labor Office, 1946) and *idem*, "Problems of Planning Public

In addition to a thorough planning program, Higgins finds certain other factors to be a necessary basis for a public investment stabilization program. One difficulty arises out of problems which confront the investment programs of state and local governments. Under normal, peacetime conditions the state and local governments do the bulk of the spending on public investment programs, outspending the Federal Government by as much as three and four times. But these levels of government are severely handicapped in efforts to adapt themselves financially to a program of contra-cyclical spending. For one thing, many of their expenditures, such as outlays on education, health, and protection, are not cyclically variable. Much more important are their limitations on sources of revenue. Like the Federal Government, their tax revenues tend to vary directly with the cycle. But, unlike the Federal Government, the credit rating of state and local governments tends to follow the cycle, so that their borrowing capacity tends to fall in depression periods and rise in prosperity periods. Many of them rely on commodity and property taxes, both of which are not only undesirable because of their regressive nature, but also because they tend to repress consumption and investment in private property, respectively. Many of them have an absolute upper limit imposed on their borrowing capacity by constitutional provisions. A great many local governments are limited in their borrowing capacity to stated percentages of assessed real estate values, and these, too, tend to fluctuate directly with the cycle. All these factors tend to produce a cyclical perversity in state and local finances, their expenditures tending to fall and rise sympathetically with the business cycle. For this reason, Higgins emphasizes the need for an elaborate system of contra-cyclically variable grants-in-aid to these levels of government by the Federal Government, whose far greater borrowing capacity (which, incidentally, tends to rise in depression periods) enables it to pursue a contra-cyclical spending program. A system of grants-in-aid would go a long way toward enabling the state and

Work," in *Postwar Economic Problems*, pp. 187-205. See also the excellent discussion of the problem of public works by W. F. Stettner, "Public Works and Services," in *Housing, Social Security, and Public Works*, *Postwar Economic Studies* No. 6, Board of Governors of the Federal Reserve System (Washington, 1947).



local governments to adapt their spending programs to conform to a national stabilization policy.

The studies by Higgins have also led to certain other proposals for speeding up public work programs. He suggests that projects be undertaken on "force account," that is, with a government's own labor force. If use is made of a private contract system, these should be let in advance but should contain an "escalator clause," requiring revision of terms in accordance with changes in costs between the time the contract is let and the time the project is actually begun. Breaking down contracts into component parts and getting started on one part while dickering is going on for a later one is another way of speeding up things.

Also suggested are plans for the advance acquisition of sites and broad powers of condemnation to avoid the needless delays in acquiring sites which have characterized public work projects in the past.

Higgins also deals specifically with the problem of the construction periods of investment projects, mentioned above. In addition to creating in advance a shelf of projects, he advises the drawing up in advance of working drawings and specifications. Furthermore, he points to a study made by the U.S. Public Work Reserve, indicating that projects normally handled by state and local governments can be expected to reach completion within a period of six months to a year. This finding is especially significant, for it means that by "loading" public work programs with these types of projects, it is easy to curtail them during periods of recovery merely by allowing them to run off without replacement. In this way, "most projects can be made to fit into almost any interval of unemployment that is likely to arise."<sup>19</sup>

There is, then, strong reason to believe that if advance planning and appropriations are provided for, along with a well conceived grants-in-aid program for state and local governments, a good deal of flexibility can be incorporated into public works programming, enough to enable them to be used as a powerful tool in the general kit of stabilization tools.

<sup>19</sup> *Public Investment and Full Employment*, p. 146.

*Suggestions for Improvement of the Federal Tax Structure*

Of necessity, the following discussion must be brief and cursory. Strictly speaking, a discussion of revisions in the tax structure belongs to a book on public finance. Nevertheless, we have been so concerned with the investment and consumption functions in this book that a brief discussion of one of the fundamental influences on these functions, namely, the tax structure, may not be misplaced. The interested reader is referred to the citations in footnote 20 for more detailed discussions of the influence of the tax structure on the rate of private investment and the community's propensity to consume.<sup>20</sup>

*Redistributive taxation* has often been proposed as a means for raising the nation's propensity to consume. The term redistributive taxation implies the construction of a very progressive tax structure, that is, taxing the low-spending high-income groups at high rates while taxing the higher spending middle- and low-income groups at comparatively low rates, with the aim of raising the rate of consumer spending. In an earlier footnote we had occasion to note certain existing limitations on further redistributive taxation than is already in effect in the United States. Estimates made recently indicate that the best that can be hoped for from most reasonable redistributions in personal income is an increase in consumption of 3 to 5 billion dollars.<sup>21</sup> The reasons for this are threefold. In the first place, the personal income tax structure is already highly progressive. Secondly, the bulk of the national income (for all its inequalities of distribution) is concentrated in the middle and lower income brackets (i.e., the brackets which include those groups earning up to \$5,000 a year). Points one and two imply that there is

<sup>20</sup> See Harold M. Groves, *Postwar Taxation and Economic Progress* (New York, McGraw-Hill Book Company, Inc., 1946), particularly Chaps. 2, 7, and 8, R. A. Musgrave, "Federal Tax Reform," in *Public Finance and Full Employment*, Postwar Economic Studies No. 6, Board of Governors of the Federal Reserve System, Washington, 1947, and E. D. Allen and O. H. Brownlee, *Economics of Public Finance* (New York, Prentice-Hall, Inc., 1947), particularly Chaps. 14 and 15.

<sup>21</sup> In addition to the articles by H. Lubell, cited in footnote 5, Chapter 13, see the interesting study of R. A. Musgrave and Mary S. Painter, "Impact of Alternative Tax Structures on Consumption and Saving," *Quarterly Journal of Economics*, LXII (August, 1948), pp. 475-499.

not nearly as much leeway for income redistribution as is commonly supposed. Finally, there is the fact that the marginal propensity to consume of the income groups up to the \$5,000 bracket is virtually the same.

Certain gains, from a stabilization point of view, nevertheless, will accrue from slightly increased progression. The increase in consumption is small because such a large fraction of the national income (more than 85 per cent) is already devoted to current consumption. A much larger (relative) reduction in *savings* will occur, however, and this will greatly diminish the amplitude of the fluctuations in the volume of savings. This result is important, in turn, for limiting the effects of fluctuations in private investment (provided care is taken to contain attempts to offset this development through increased resort to bank credit).

Moreover, insofar as redistributive taxes serve to raise the position of the entire consumption function, a multiplier effect is established. We have noted earlier that shifts in the position of the propensity to consume create multiplier effects in precisely the same manner as do shifts in the investment schedule. Thus a rise in the consumption function leading to an increase in consumption of (say) 4 billion dollars at *old* levels of income will actually raise consumption (with a multiplier of 2) to twice that amount at the *new* level of income which results from the higher *position* of the consumption function. A rise in income of 8 to 10 billion dollars brought about in this manner is not to be sneezed at, considering that the budget deficit of the Federal Government during the thirties averaged only about 2.5 billion dollars.

However, care must be taken to distinguish a progressive tax structure applied to personal income from one which applies to business incomes. A progressive tax system applied to business incomes is likely to reduce the rate of investment at the same time it reduces the rate of corporate saving. In the case of new and small firms this investment effect is likely to be especially severe; by virtue of their newness and/or smallness these firms often have limited access to the capital markets. Even large, established firms may well curtail investment outlays in response to high taxes on their incomes, however. This is especially true of manufacturing firms

(as opposed to public utilities), who traditionally have derived the bulk of their investment funds from reinvested earnings. Insofar as the bulk of capital for expansion appears to come from internal financing, taxes which reduce business savings have deleterious effects on investment.

The same argument seems less applicable to personal savings, so that there is considerably less to fear from untoward investment effects as a result of high individual tax rates on the incomes of the very high income groups. The historical development of modern enterprise seems to indicate that a reduction in the savings of these groups will do little in the way of curtailing investment, because, in the past, they contributed very little to the supply of capital funds available to new industries. In the past the bulk of new investment funds has come from plowed-back profits; whatever amount of venture capital did come from outside sources came principally from the great middle-class incomes. On these grounds it is felt that highly progressive *personal* income taxes can be expected to curtail savings without impairing the rate of investment to any significant degree. This would be particularly true if certain other adjustments were made in the tax structure, which would result in greater *equity* in the tax treatment of returns from risky investments. To a discussion of these adjustments we now turn. In the interests of brevity, we shall present the following discussion of some of the proposals for improving the United States Federal tax system in something of an outline form.

1. *Provision for Loss Offsets and Averaging Incomes over Time.* Earlier we had occasion to note that under the existing system of progressive tax rates, fluctuating incomes were inadvertently discriminated against. The reason is that, unless special safeguard is made, progressive tax rates naturally tend to raise taxes on gains from investment more than they reduce taxes on losses from the same investments.<sup>22</sup> Since fluctuating incomes are largely associated with risky investments, these effects discriminate against risky investments and act as a damper on venture capital. Moreover, they act as a damper on all those industries which yield fluctuating incomes to the factors employed there; this means, in effect, the bulk

<sup>22</sup> An illustration of this point is given on p. 569, footnote 12.

of manufacturing industries, for these in general are confronted with fluctuating incomes.

Two important ways of overcoming these inequities have been suggested. One is to permit the taxpayer (including corporations) to substitute an *average* income, covering a period (say) of five years, for the present annual income as the present tax base. Then the taxpayer could determine what his tax liability would have been if his yearly income for the period had equaled his average; if the total of taxes actually paid in this period exceeded his liability computed with the average income as the yearly tax base, the taxpayer would claim a refund for the difference.

In order to prevent this averaging system from accruing to the benefit only of the comparatively high income brackets, it has been suggested that provision be made to permit the low income brackets to carry forward unused tax exemptions and losses for a limited period.

Equally important as a means of overcoming the existing inequities and the dampers to private investment are proposals for much broader provision for *loss offsets* than now exist. These proposals generally would permit the offsetting of losses from investment against other taxable income, either in present or future income periods for a limited period of five years or so.<sup>28</sup>

It is to be noted that there are certain limitations to the advantages that would accrue from the "averaging" and "loss offset" proposals, particularly as they would apply to new and/or small firms. Large corporations may ordinarily be expected to have a diversified stream of income, so that it is much easier for them to offset losses in one direction against gains in another. The same does not hold for small firms, whose sources of income are usually rather narrow in scope. New firms whose losses at the start are great enough to "sink" them will obviously reap no advantage from the ability to offset losses against future incomes (which they will never get a chance to realize). The uncertainty that future profits will be

<sup>28</sup> Permission to offset losses against past incomes has been deemed inadvisable on the grounds that it would open the way to large-scale litigation, opening of closed tax accounts, etc., all of which would make the administrative costs of the program unduly high.

earned (at all, or soon enough to avoid liquidation) greatly limits the encouragement which offset provisions can give to risky investment in new enterprises. This factor gives rise to a strong case for removal of business taxes on small and new firms or, at least, for some special provision for them.

2. *Taxation of Realized Capital Gains.* Closely associated with the problem of taxing fluctuating incomes is the problem of taxing capital gains. From the point of view of minimizing dampers to investment, this problem is especially important, because in actual practice, most of the fluctuating income from risky investments is yielded in the form of capital gains. Most proposals for treatment of capital gains and losses call for handling them as personal income, subject to the same rates, together with some form of averaging and offsetting process. Thus realized capital losses in one period or from one investment may be offset against income from an investment in another period or other income in the same period. Alternatively, realized capital gains or losses may be averaged over a period of years equal to (say) the period over which the asset was held, with the taxpayer being liable at a rate equal to that which would have applied had his yearly income equaled this average. Care must also be taken to prevent continued avoidance of these taxes through gifts and death. It is widely suggested that capital gains (or losses) be treated as realized at the time of death or transfer through gift and the gains (losses) taxed at the appropriate income tax rates.

3. *Elimination of Tax-Exempt Securities.* For various reasons governments in the United States, particularly state and local governments, have issued tax-exempt securities. In the present context, the most important effect of tax exemption has been to drive venture capital away from risky investments into the relatively riskless tax-exempt securities. Even though the latter bear much lower interest rates, they still are more attractive to the average investor who has to pay taxes on interest income from higher interest-paying private securities. A person in the high income brackets who has to pay (say) a 50 per cent surtax may well find a 3½ per cent tax-exempt bond more attractive than an 8 per cent bond to which is attached an element of risk. This situation makes it imperative that

steps be taken to remove the tax exemption privilege now granted state and local securities.

4. *The Integration of Personal and Corporate Income Taxation.* We have pointed out repeatedly the potentially damping effects which taxes on corporate income may exert on investment. Most of the case against corporate taxes is embodied in the argument that to the extent that these taxes reduce the returns on investment, they diminish the willingness to bear risks. It is the feeling of most writers that the complete removal of corporate taxes would remove most of the incentive-destroying effects of taxes, even if personal income taxes were raised to offset the decline in revenues caused by the elimination of corporation taxes. One reason has been admirably described by Professor Groves. Asserting that corporation managers are more concerned with corporation profits net of income taxes than they are with the income of stockholders net of income taxes, Groves says, "the company's success, with which management identifies personal success, is measured first by corporate net earnings, next by dividends, and least by dividends net of personal tax."<sup>21</sup> Another reason is that which we have noted in connection with small and new firms. In view of their limited access to the capital markets, taxes on the income of small and new firms handicap them in their ability to finance themselves out of reinvested earnings. We have seen also that small and new firms cannot be helped completely by such tax provisions as averaging and loss offsets.

Certain factors, however, make it difficult to do away with corporate taxes altogether. One is the fact that moderate corporate taxes, given adequate provision for offsetting, are preferable to higher taxes on consumer goods or higher payroll taxes.

A further problem is posed by undistributed corporate profits, which permit stockholders to avoid part of their personal income taxes. Various proposals have been made with the aim of overcoming this problem. One of these is an undistributed profits tax at very high rates, in place of other taxes. Another suggestion is a tax on corporate net income, but with the privilege granted the corporations to deduct dividends paid from their taxable income. A

variation of this second suggestion is one, modeled after the British system of income taxation, in which a tax would be applied to all of corporate net income, and the stockholder would be allowed to deduct from his tax liability the amount already paid for him by the corporation.

Inasmuch as corporations withhold dividends as a means of accumulating liquid cash balances for future emergency (precautionary) purposes and as a means of providing themselves with funds for expansion of plant and equipment, in addition to withholding them as a way of allowing stockholders to avoid tax liabilities, suggestions have been made to supplement the above proposals to permit the retention of corporate profits for legitimate purposes. To allow the accumulation of precautionary cash balances without penalty, corporations might be permitted to carry forward for some period of time retained profits of one year and offset these against distributed earnings in another year. If it was felt worth while, corporations might also be permitted to deduct from taxable income current (gross) expenditures on plant, equipment, and inventories.

In the case of new and small corporations it is particularly important that some provision be made for them which will permit them to build up their liquid cash positions and retain earnings for reinvestment. Because of their restricted borrowing capacities, special provisions for them alone are in order. Assuming the problem of defining new and small firms is overcome, they might be made exempt from taxes altogether up to a certain level of profits. Additionally, or alternatively, they might be permitted to count a certain amount of retained profits as dividends and deduct this amount from their taxable income. Another proposal would have small corporations treated as partnerships.

It has also been suggested that businesses be given the privilege of "accelerated depreciation." This would permit costs of equipment to be charged to depreciation more rapidly than is now allowed; in effect, it would allow income currently invested in depreciable assets, for replacement purposes as well as new additional equipment, to be deducted from taxable income. It is thought that such a provision would provide a stimulus to investment, by speed-



ing up the rate of replacement or acquisition of new equipment, particularly during depression periods.

All in all, students of the tax-structure problem are generally agreed that as much reliance as possible should be placed on personal income taxation. Properly set up, personal income taxes would give to the tax system its greatest degree of equity and flexibility and, at the same time, minimize deterrents to new investment to which taxes give rise. Where the retention of corporate taxes is found necessary, improvements in their structure along the lines suggested in the foregoing paragraphs are in order.

#### THE NATIONAL DEBT AND ITS MANAGEMENT

Up until now we have for the most part, excluded from our discussion considerations concerning the national debt. Implicitly, of course, the public debt has been touched upon, for budgetary surpluses and deficits inevitably affect the size of the debt. It is time now to deal explicitly with some of the problems created by the national debt and the bearing of these problems on fiscal policy and economic stability.

##### *The Role of Debt Management in Fiscal Policy*

In the United States, as in most countries of the world, the national debt has grown to such proportions as to become a major instrument of fiscal policy. It is impossible to think of its management outside the broad framework of policy designed to achieve economic stability. The debt may be used to lend an inflationary tone to the national income; it may also be used to create sharp deflationary forces in the economy; its existence influences the distribution of the national income. In short it is an instrument whose management directly affects the welfare of the entire nation, and it should be used in this manner. Certain misconceptions have prevailed in the past and continue to exist, however, which have interfered with attempts to manipulate the debt successfully in its role as a major tool of economic policy. The most egregious error committed by the ill-informed segment of the public consists of persistent attempts to draw an analogy between the finances of the national government and those of the individual business concern.

*Public Debt vs. Private Debt*

When a business concern borrows, it incurs a burden which potentially may envelop it in bankruptcy. In the beginning, of course, it benefits through the transfer of resources, or monetary command over these resources, from lenders to itself, the borrower. However, it incurs the obligation of paying interest on the loan, and, like the borrowed principal, interest payments involve a transfer of command over resources, only this time in the opposite direction—to the lenders. Finally, there comes a day, also, when the principal must be repaid, either *in toto* or in amortized form. Payments of interest and repayments of principal are direct financial burdens to the business firm. In effect, they are a source of impoverishment to the firm. They necessarily involve a loss of some of the firm's financial resources, and there is an irrevocable obligation to pay the required sums. Failure to do so means bankruptcy. Therefore, it is necessary that the firm gauge its borrowing activities with an eye on its ability to repay. It must be certain that its business activities result in sufficient income to assure a capacity to pay interest and principal, or else bear the consequences. Most assuredly, it cannot go on merrily unbalancing its budget and rolling up debt. No firm has unlimited access to the capital market. A day of reckoning must sooner or later come to pass. Moreover, there is always the threat that the fixed charges of a debt will prove the firm's undoing should a depression set in and cause both its current income *and* credit position to deteriorate. All too many firms have sunk under the "dead-weight" of their interest burden during periods of cyclical slump.

As is well known, many people have erroneously concluded that since a business firm faces bankruptcy from too great a debt burden, then the national government should strive with all its might to balance its budget and minimize the size of its debt, or else face the same consequences. There were people who were very upset when the size of the Federal debt rose from some 15 billion dollars in 1929 to a little over 18 billion dollars in 1932. When the debt rose virtually to 40 billion dollars in 1939, they were predicting collapse. Yet we have just gone through four or five of the most prosperous

years in the nation's history with a debt that has averaged over 250 billion dollars in the postwar period. Imagine the reaction of the pessimists to a forecast of a national debt of this magnitude. A prediction of this sort would have been equivalent to one of national calamity. Nevertheless, the nation is in sound financial shape, enjoying peak level of employment and booming prosperity. Why no collapse? Obviously, something must be wrong with the analogy between the finances of a business firm and those of the national government, and something is.

As long as a debt is *internally* held, this analogy is incorrect. A nation is not one whit poorer for the payment of interest on the national debt, because these payments involve absolutely no transfer of resources outside the nation's boundaries. The natural and capital (stock) wealth of a nation, as well as its national income, still remain within the confines of that nation when interest is paid on its public debt to its (domestically situated) nationals. Of course, a transfer of *ownership* over these resources from taxpayer to bondholder occurs, but for the nation as a whole, the same total of resources exists before and after the interest and *principal* are paid.

It is when a debt is held by people in foreign countries that the comparison between the finances of a single firm and those of a nation is a good one. For then the nation is, like a business firm, an economic unit in a sea of such units. And, like the firm, payment of interest and principal involves a transfer of resources from one unit (nation) to another. The people are impoverished to the extent of the transfer of these resources; they are working not for their own benefit, but for the benefit of foreign peoples. But as long as the debt is held internally, no such transfer of resources occurs, and the nation's wealth is undiminished.

Assuming an internally held debt, there are other fallacies in the reasoning of those who would have the government model its finances after those of the business firm. In the first place, such advice overlooks the fact that unlike the firm, the government is not limited to sales receipts for income. As long as governments have the tax power, the term bankruptcy has little meaning when applied to them. As long as there is no question concerning their stability, the borrowing power of most governments is also usually unlimited.

If the non-bank public won't lend, resort can be had to the banks, particularly the central bank, and if needs be, to the printing press. As a matter of fact, however, the national government's credit position usually rises during periods of depression, when its tax revenues fall. The reasons are that there is little danger of default on government securities, because of its tax and money creating powers, and the fact that there is so little private demand for loanable funds.

It is plainly evident that a great many banks and non-bank lenders are only too willing to lend to the Federal Government during major depressions because of the lack of good "security risks" to whom to lend, on the one hand, and the "gilt-edged" character of government securities, on the other.

Furthermore, a national government can look forward to a rise in the national income as a result of its deficit-financed expenditures, especially if these are bank financed. As a result, its budgetary position may ultimately be better off after the spending operation than before, for a higher national income will mean higher tax revenues (provided tax rates are not lowered sufficiently to prevent this). No business firm is large enough to exert such an effect on the national income. Put more specifically, even if a firm is large enough to have its investment activities exert a stimulating effect on the national income, the proceeds would be so diffused throughout the rest of the economy, that it could look forward to receiving virtually nothing back. This is not true of the central government. Its expenditures can be lifted to a sufficient magnitude to provide a sharp boost to the level of economic activity and income of the nation, and it can look forward to recouping some of its expenditures, at least.

In the final analysis, however, it is not even necessary that the possibility of higher tax revenues should provide the incentive for governments to undertake deficit-financed spending programs, if conditions require it. The conditions referred to, of course, are primarily depression conditions. The philosophy of functional finance, as well as that of many people who have never heard of this term, is that the government's business is the general welfare of the public. It is not in business to show a profit as is the ordinary business firm. Its "business" is the public welfare. When there is deep

depression, and widescale unemployment and misery during these times, if the government has it within its power to boost the nation out of the economic doldrums, by all means it should do so. Failure to do so may plunge the nation into far worse evils than a large size national debt.

### *The "Real" Burdens of a National Debt*

To deny the validity of an analogy between the financial burden of debt to a business firm and its burden to a nation and its government is not to deny that there may be no burdens to a national debt at all. But the burdens, to the extent that they may exist, are rarely those which are heard on the street or in the halls of Congress. The national debt is a burden on the community if it causes taxes to be high enough to act as a depressant on the incentives to invest (bear risk) and to work. It is a burden if it results in a redistribution of the national income in favor of the rich, not only because such a redistribution may be inequitable, but because it may lower the community's propensity to consume. It is a potential burden to the community if it results in such an expansion of the money supply and other forms of liquid assets as to pose a real inflationary threat to the community. And it is a burden if the management of it is allowed to result in loss of control over the credit creating activities of the banking system, particularly in periods of boom.

Nonetheless, a rise in the national debt may also be of real benefit to the nation, as much of the earlier discussion should indicate. Aside from the tax burden, if the debt results in a great expansion of the liquidity of the nation during depression, then it becomes, through this growth in liquidity, a potentially important stimulus to the nation's propensity to spend (on investment and consumption). This result is, of course, most desirable; in addition to possibly initiating the forces which lead to recovery and prosperity, it may even ease the minds of the "worry-warts," by reducing the needed volume of government spending. By borrowing from the banks, the government enables the money supply to expand, allowing people to build up their cash positions. By borrowing short term as much as possible, and assuring the automatic redeemability and full liquidity (through security market-support policies) to long terms

when these are used, the government will also allow business firms (bank and non-bank) and households to satisfy their quest for liquidity through the acquisition of liquid and riskless securities. As a result of their much expanded liquidity position, the bank and non-bank public may be encouraged to lend and spend more freely on investment and consumption.

### *The Inflationary Potential of a National Debt*

At the same time, the enlarged cash and other liquid asset position of the public may provide the groundwork for a large-scale inflationary threat. This is particularly true if the government is forced to engage in such financing activities in periods of full or near-full employment, as happened in the financing of World War II. The public came out of the conflict with an unprecedented liquid asset position, including a money supply that had increased by some \$130 billion since 1939. (Since national income had increased by 1948 to a level a little more than double its 1939 level, in constant prices, while the money supply had risen about fivefold in the same period, it is easy to see what an inflationary threat was posed by this expansion in the money supply alone in the full employment economy of the postwar period). When expansion of the debt leaves such a legacy of liquidity behind it as to create a distressing inflationary threat, it becomes a potential burden to the economy.

The exigencies of war finance also created another vast inflationary potential. The necessity of providing absolute liquidity for government securities led to the Federal Reserve System's support of the open market for governments, in order to peg bond prices. Treasury preoccupation with a policy of maintaining a low level of interest rates on the national debt, together with a central bank fear of a collapse in the asset position of the banks, led to a continuation of the open-market support policy in the postwar period. As the reader is aware by now, this policy gave to the banks virtually undisputed control over their reserve position. Any time a bank felt itself to be in need of additional reserves for further credit expansion, it simply sold some of its government bond holdings at the pegged price. In effect, the support policy made the government

bond holdings of the banks the equivalent of interest-earning cash reserves.

When a large debt causes the government to concentrate on the policy of keeping the interest charges on the debt as low as possible, to the exclusion of other policies, we have another potential, indirect burden of a large debt. For when concern over the servicing costs of the debt leads to virtual loss of control over the credit creating activities of the commercial banks, the country is constantly confronted with a severe inflationary potential. It should be remembered, however, that such results are a burden only when the economy is approaching full employment. During periods of severe slump, it is to the interests of all that the banks have easy access to additional reserves, if such policies will encourage them to lend on easy terms. It is only when such lending will result largely in a rapid rise in prices in periods of full or near-full employment that such policies become burdensome.

### *Burden from Tax Effects*

A national debt is a burden on the economy if the taxes necessary to finance the interest charges on the debt are heavy enough to damp incentives to bear risk in investment and to work. At the outset it is important to note that it is not the absolute amount of taxes that is important, but the relative amount. It is the *fraction* of their incomes taxed that, by and large, determines the impact of taxes on peoples' incentives. Even if a man pays \$50,000 a year in taxes, he is not apt to be particularly disturbed if his income amounts to \$300,000 or so. But a \$1,000 tax is apt to be considerable to a man whose income is \$4,000 a year.

Thus it is necessary to keep in mind three variables in ascertaining the tax burden that results from the interest payments on the national debt. One is the ratio of debt to the national income; the second is the ratio of interest charges to national income; and the third is the average tax rate, which is equal to the ratio of the national debt to the national income multiplied by the average rate of interest on the national debt.<sup>25</sup> Taxes must ordinarily be raised

<sup>25</sup> See the excellent discussion of this aspect of the debt and tax problem in E. D. Domar, "The Burden of the Debt and the National Income," *American Economic Review*, XXXIV (December, 1944), pp. 798-827.

in amount equal to the interest charges on the national debt. As long as the interest (and, therefore, tax) charges can be held within the limits of 10 to 20 per cent of the national income, the tax payments should prove tolerable. Actually, as we shall presently see, the chances are excellent that the interest and tax charges can be held within the limits of  $2\frac{1}{2}$  to 5 per cent.

The reader may see that if it is the *relative* portion of the income taxed that is basic to a discussion of the incentive effects of the debt, it is important to know what there is to expect not only about the growth of the national debt and the interest charges on it, but also what we may expect in the way of growth in the national income. Historically, the record shows that despite the enormous increase in the size of the public debt, neither the ratio of debt to national income nor the ratio of interest (and, hence, tax) charges to the national income have increased very much. Thus despite the fact that between 1929 and 1949 the national debt increased from some 15 billion dollars to approximately 257 billion dollars, the ratio of debt to income increased only from 0.2 to 1.3. Even more important, the ratio of interest charges to national income has increased only from 0.8 per cent to 2.5 per cent in the same interval. The reason for the small increases in both ratios has been, of course, the very rapid rise in the national income, from 68.4 billion dollars in 1929 to 220 billion dollars in 1949 (in current prices).

The rise in national income is actually the crucial element in the problem. In the past three quarters of a century it has averaged an annual rate of growth of approximately 3 per cent. If we could be certain of a continued rate of growth of this magnitude, we could well shunt aside all fears relating to the size of the debt. Taking a very pessimistic view of the rate of growth of the public debt and assuming it to be, on the *average*, 6 per cent a year, we would find that the fraction of the national income that would be taxed for interest payments would actually *fall* through the years.<sup>26</sup> Since a 6 per cent yearly rate of growth in the debt is rather high (it virtually acknowledges the validity of the stagnation thesis), it is evident that a smaller rate of growth will cause the ratio of interest charges to the national debt to fall even faster than it would with the

<sup>26</sup> Cf. Domar, *op. cit.*, pp. 810-812.



6 per cent rate of growth, *provided* the national income continues to grow at the yearly rate of 3 per cent. Even if the rate of income growth is 2 per cent, however, Domar has shown that, given the 6 per cent growth rate in the debt, the interest charges on the national debt in 50 years will still amount only to 5.36 per cent of the national income, a figure which should occasion little alarm.<sup>27</sup>

Professor Seymour Harris has perhaps put the matter a little more descriptively. "A steady rise of income of \$1 billion per year (less than 1 per cent of current income) can easily finance an increase in debt of \$5 billion yearly. In other words, an increase of income of \$1 billion at the present income level can provide Federal taxation of \$200 million or more, which is in excess of the additional annual debt charge of \$125 million, the cost of a debt of \$5 billion at an interest rate of 2½ per cent."<sup>28</sup> As Harris notes, this statement makes the extreme assumption that the 5 billion dollars of deficit spending itself adds nothing to the national income, and therefore makes no allowance, in addition, for any multiplier effects of the deficit spending. If the debt-financed expenditures of 5 billion dollars cause the national income to rise by at least the same amount, they automatically more than finance their interest charges. As long as the national income continues to grow, and the deficit-financed government expenditures can make it grow, there seems to be little doubt, at present, that the interest and tax burden can be held easily within tolerable limits. All that is necessary is to educate the public to the fact that it is these *relative* magnitudes that count. If this point can be gotten across, it should be possible to make the statement, without creating a wave of pessimism, that with the real national product doubling, as it has, every 25 years or so, the national debt can increase by 250 billion dollars or so every 25 years, and the relative burden of the debt would remain unchanged. This burden at present is an interest and tax charge of 2½ per cent of the national income and may be considered virtually a negligible influence on incentives. But even if it rises to

<sup>27</sup> *Ibid.*

<sup>28</sup> S. E. Harris, "Postwar Public Debt," in *Postwar Economic Problems* (New York, McGraw-Hill Book Company, Inc., 1943), p. 170.

(say) 5 per cent or 6 per cent, or even 10 per cent, it is still likely to be well within the limits of tolerance.

### *Burden from Redistribution Effects*

A national debt is also a burden on the economy if it is concentrated in the hands of the high-income groups (directly or through institutions). When this is the case, taxes may take income from low-income groups, whose marginal propensity to consume is high, to finance the interest payments to the bondholders, whose marginal propensity to consume is low. The result is to depress the propensity to consume of the entire community. Along with these economic effects are the welfare and equity arguments against any increased inequality in the distribution of the national income. The problem of concentrated ownership of the public debt becomes particularly important when the debt is expanding rapidly. For then it requires a high rate of saving, and it is only the high income groups and the savings institutions that can provide the necessary rate of saving.

There are reasons for believing that this form of the burden of the debt has been somewhat overemphasized in the past. First, it is necessary to note, as in the case of the tax effects, that the importance of the redistributive effects of the tax-financed interest payments depends in large part on the relative importance of these payments to the national income. We have already observed that today these charges approximate  $2\frac{1}{2}$  per cent of the national income and at present show little danger of exceeding 5 per cent or so of the national income. A redistribution of the income of these small magnitudes is not likely to exert much effect on the community's propensity to consume, particularly in the presence of certain other factors.

In the first place, part of the  $2\frac{1}{2}$  per cent of the national income that is paid out as interest on the debt accrues to the middle- and low-income groups, holders of "E" bonds and other government savings bonds. Secondly, present estimates are that the government recoups between 15 and 20 per cent of its interest payments on the national debt in the form of taxes.

It must also be remembered that a very progressive tax structure

ensures that a large segment of these recouped interest payments comes from the upper income groups themselves. Moreover, the deflationary effects of whatever part of the national income is redistributed in favor of the high-income brackets are offset to a considerable extent by the fact that an estimated one-third of total taxes collected tends to come out of income that otherwise would go into idle savings.<sup>29</sup> Given these facts, together with the fact that, at present, interest payments amount to only 2½ per cent of the national income, we may state with complete assurance that the redistributive effects of the interest charges are certainly within manageable limits.

### *Should the Principal of the Debt Be Repaid?*

Up to this point the discussion of the public debt has said nothing about the possibility of reducing it in size, of paying off some of the principal. Should we attempt to repay at least some of the debt? The answer is "yes," bank-held debt, in times of inflationary pressures, and "no" in times of depression. It is apparent from this statement that the debt is still to be viewed as an instrument of fiscal policy, as being the other side of budgetary policies involving surpluses and deficits.

Any attempts to utilize taxes to pay off the debt during depressions in an effort to reduce the burden of the debt are likely to result only in an *increase* in the burden. This would be particularly true of debt owned by commercial banks, for repayment to them in deflationary periods would add severely to the deflationary forces. The added pressure on the national income would make the interest charges on the debt a larger fraction of the national income and, therefore, add to the "burden" of these payments. Repayment to nonbank groups is likely to add primarily to the idle cash balances these groups tend to accumulate during depression times.<sup>30</sup> Thus

<sup>29</sup> See the interesting estimates on the various offsets to the deflationary effects caused by the redistributive effects of the interest payments in H. C. Wallich, "Public Debt and Income Flow," in *Public Finance and Full Employment*, Postwar Economic Studies No. 3, pp. 86-89. Wallich estimates that the net deflationary effect on the national income caused by a redistribution of 5.7 billion dollars in the form of interest payments would approximate 1 billion dollars or so.

<sup>30</sup> A potentially important exception to this is likely to emanate from the

the repayment of debt from taxes during periods of slump would be little short of disastrous; it would be the worst type of economy conceivable.

In periods of inflation, it is good fiscal policy to use taxes to retire some of the debt, but only bank-held debt. The deflationary effects on the national income of this type of repayment are brought about by the resulting contraction of demand deposits; repayment of central bank-held debt would be even more deflationary, because it would reduce bank reserves as well. Repayment of debt held by private individuals is ill advised, because it will serve to build up the cash balances of the bondholding groups.

It should always be kept in mind that regardless of whatever burdens of the debt there are, repayment of it during depressions will serve only to increase these burdens. On the other hand, repayment of bank debt in inflationary periods is sound policy at all times (provided that care is taken not to deflate the income in this manner to an extent that might precipitate the economy into a deflationary spiral).

### *The Case for Interest-Free Borrowing*

Much of the preceding discussion concerning the "true" burdens of the debt should make the reader a bit more susceptible to suggestions of borrowing by the government on an interest-free basis. As we have previously noted, interest-free borrowing might be accomplished either through the issue of currency by the national government or the issue of non-interest bearing government securities to the central bank. Interest-free borrowing has the decided advantage of removing from the picture the problem of damping effects on consumption and investment created by the collection of taxes to finance the interest payments on interest-bearing debt. It

redemption of bonds by the low-income groups, who will be inclined to spend the bulk of the proceeds. In this case provision might be made to permit retirement of privately held debt through redemption only, since it is likely that the bulk of such redemptions would be made by the low-income groups. This might be fashioned after the Series "E" World War II bonds, which were sold primarily to wage groups and were made redeemable. In depressions these redemptions should be made through a refunding operation of sales of bonds to the banks; the redeemed funds would thus constitute a net addition to the income stream.

gets rid, also, of the problem arising out of concentrated ownership of the debt, that is, the depressive effects on the consumption function caused by a redistribution of the income in favor of the low (marginal) spending, high-income groups. It would remove, too, the problem of loss of control over the banking system created by "support" policies designed to keep interest rates on government securities low.

The suggestion that the government print money to finance its spending meets a variety of objections, few, if any, of which have any sound basis. A good bit of the fear of such a proposal on the part of the bulk of the public would disappear if it could be persuaded that there is no basic difference between the creating of credit by the central and commercial banks and the use of the printing press. The banks simply have developed a very neat and, for most people, concealed form of printing press. This is especially true of borrowing from the central bank, whose credit acts as bank reserves in the same manner that the issue of Treasury currency would and does.

Those who argue that interest-free borrowing would encourage the government to spend unwisely seem to feel that somehow government borrowing and spending are, *ipso facto*, made better when interest is paid. Such thinking is entirely illusory. The government can make as many errors in spending while paying interest (often *nominal*) as it would when not paying interest. Certainly, the payment of interest is no criterion, whatever, as to the propriety of a particular line of government spending.

Others argue that such borrowing would be inflationary. The replies to this objection should be self-evident. Interest-free borrowing is no more inflationary than borrowing at interest from the central bank, which has been going on for time immemorial. Furthermore, the "rules" of functional finance clearly dictate that such borrowing would take place to finance spending only during depressions. But, after all, this dictum is the same as that applied to deficit-financed spending involving bank borrowing at interest. Sound fiscal policy dictates that borrowing from commercial banks or central banks should take place only during periods of depression. It is just as poor policy to finance government outlay through such

bank borrowing in periods of full employment as it would be to resort to the printing press in such times. This last statement contains the nub of the whole problem. That is to say, *from the point of view of appropriate counter-cyclical fiscal policy, the payment of interest on the debt is completely neutral.*

A more soundly based objection to interest-free borrowing comes from those who are concerned about institutional investors whose income primarily consists of interest on government bonds. These include commercial banks, insurance companies, educational institutions, and a wide variety of pension funds. In the present writer's opinion, it is difficult to justify the payment of interest on the entire government debt simply to keep all such institutions going. In effect, the interest payments on the government debt are being used as a form of *subsidy*. Yet there does not appear to have been any conscious discussion and decision-making by the nation (or its representatives) on the question of whether it wants to subsidize *all* the institutions now "living off the fat" of government interest payments.

Obviously, there are certain groups whose subsidization is quite desirable. This would be particularly true of the colleges and universities, for example. It is less certain, on the other hand, whether we want to subsidize all 14,000 commercial banks in the country. Perhaps it would be more desirable to force the banks to get their income from service charges and *private* loans and investments. At any rate, it is suggested that we replace the present form of concealed (interest) subsidization program with a program of direct, outright subsidies. Such a program would have the advantage of forcing us *consciously* to decide precisely which of these institutions we deem worthy of subsidization, instead of blundering along in the dark as we do at present. And it would free the hand of the monetary and fiscal authorities to use the interest rate on the government debt purely as a counter-cyclical tool, even resorting to interest-free borrowing when the occasion warrants it. From the point of view of effective stabilization policy, this use of the interest rate on government debt would constitute an important step forward.

**WAGE AND PRICE POLICY*****Wage and Price Reductions in Depressions***

Since we have already discussed the pros and cons of wage and price flexibility at some length,<sup>31</sup> particularly during depressions, we shall do little but summarize briefly the arguments presented there, with the addition of a few remarks on wage and price policy in periods of full employment.

We have taken the position of denying the fruitfulness of relying on a policy of general wage and price reductions as a means of getting an economy out of the doldrums of depression. It is evident that if such a policy is to be successful it must either raise the schedule of investment and/or the propensity to consume, or both, to levels high enough to generate a full-employment level of income. On various grounds we have posited reasons for doubting that this is possible, or, if possible, that such a policy is feasible within the context of the present social milieu.

Let us start first by restating the analysis, in summary form, of the effects of wage and price reductions on investment. One reason for favoring a policy of wage and price reductions in depressions is that these reductions would permit the release of cash from transactions balances to satisfy the desires to hoard cash for speculative or precautionary purposes. Such effects, in turn, would permit interest rates to be reduced and, therefore, stimulate the rate of investment. On two counts the possibility of effectively lowering interest rates in this manner has been questioned. One is that they may be prevented from falling to the necessary levels because of extreme elasticity in the demand for cash to hoard for speculative purposes. The second is that the great waves of pessimism and uncertainty that tend to prevail during major depressions may make the demand for emergency (precautionary) hoards well-nigh insatiable, causing the liquidity preference schedules to *shift* upward enough to keep interest rates from falling, regardless of the elasticity of these schedules.

Even granting, for the sake of argument, that the interest rate

<sup>31</sup> See pp. 160-178 in Chapter 4.

structure could be reduced to a significant extent, there are various reasons for doubting the ability of low interest rates alone to stimulate investment. For one thing, the same pessimism and uncertainty that cause the strong demand for precautionary cash hoards may also push the marginal efficiency of capital schedule to too low a level to be affected by positive rates of interest, and in a system where the hoarding of cash is costless, interest rates cannot be made negative.

Put somewhat differently, we may say that in a world of uncertainty, the risk component of the discount rate will, in periods of depression particularly, swamp the interest rate component, rendering reductions in (long-term) interest rates of negligible importance in the capitalization process. Furthermore, numerous factors have been suggested which serve to shorten planning (discount) periods, thereby also rendering changes in interest rates negligible in importance, for only distant future revenues are very sensitive to changes in (long-term) interest rates. A large number of empirical studies have been made, all of which point to the lack of importance of interest rates in the making of investment decisions.

Others have argued that increases in liquidity do not have to work through the medium of interest rates to influence investment decisions. By building up the volume of liquid cash reserves for hoarding purposes and by increasing the *real value* of these and other liquid assets (government bonds, in particular) through the fall in the general level of prices, it is asserted that investment will be stimulated *directly*. In reply, we have urged that the aforementioned pessimism and uncertainty which prevails during depressions is likely to keep such upward shifts in the investment schedule within very narrow limits, most of the increased liquidity being used to satisfy the precautionary and speculative hoarding propensities.

Utilizing what we have called the "Pigou effect," there are those who have argued that the increase in general liquidity brought about by the release of cash from active balances to idle hoards and the rise in the *real value* of liquid assets in general, all as a result of the fall in wages and prices, will tend to raise the *propensity to consume* to the level required for a full employment level of



national income. Although admitting that this effect may take place, we have indicated reasons for doubting that it will be substantial enough to give the results suggested. One of these reasons consists of the redistributive effects that will tend to follow the cut in wage rates. Lower wage rates will tend to cause a redistribution of the national income from the higher (marginal) spending, wage income groups to the lower spending nonwage groups. Moreover, the existence of varying degrees of monopoly throughout the economy makes very questionable the extent to which many prices will fall. In addition, the same type of pessimism that grips business firms during depressions will also dominate the thinking of households. The uncertainty of employment and future incomes will bring great pressure on households to build up their cash balances. Of course, to many whose consumption has been curtailed by partial or total unemployment and reduced incomes, lower prices are a bonanza, enabling them to restore at least part of their predepression consumption standards. Thus we may expect some positive effect on the consumption function, but it is likely to necessitate large and continuous wage cuts to raise it even near the level required for a full employment income. While there may be a level of wages and prices low enough to raise the consumption function to full employment heights, the level is apt to be so low as to invite political and social upheaval long before it is reached.

Nor is the situation altered if we take the "cost approach" desired by some. Wage cuts will reduce costs and, assuming that prices fall, at least, less than proportionately, profit margins will tend to expand, other things remaining unchanged. But other things will not remain unchanged. For general wage cuts not only reduce costs, they reduce wage incomes, with the result that consumer demand is also reduced. The problem then becomes one of determining the relative rates of response of the consumption and investment functions. If investment responds quickly, then aggregate income and demand may be maintained (assuming the elasticity of demand for labor to be at least unity, an assumption itself which is open to possible question). But if investment lags in its response, the income stream will be broken again, and income and consumption will fall, with a net damping effect on (induced)

investment. On the whole, there is reason to doubt a quick and sharp response in investment because of lower (wage) costs. With demand at relatively low levels, businessmen are not disposed to increase production and investment, even in the face of lower costs; there is little point in expanding investment if you are convinced that it will be to no avail as far as sales are concerned. This fact is accentuated by the large amount of excess capacity that invariably prevails during major depressions. In the face of the widespread pessimism and uncertainty which characterizes such periods, we are more legitimate in supposing that businessmen are likely to use much of the additional net revenue that followed a reduction in costs to pay off outstanding debt or build up their cash positions.

Moreover, it must be remembered that if investment in heavy projects is to be stimulated by lower wage costs, the latter have to operate on net revenue streams far into the distant future. But the risk factor, which dominates virtually all thinking during depressions, not only tends to rule out long-range planning, but will tend to swamp the effects of lower wage costs on future net revenue streams in the capitalization process.

Finally, there is the troublesome matter of expectations, from which we most certainly cannot abstract in business-cycle analysis. If marginal efficiency of capital schedules are both interest and liquidity inelastic, and/or liquidity preference schedules are very elastic, and/or consumption is also liquidity inelastic, then the resort to wage and price reductions to stimulate investment or consumption is apt to give rise to adverse expectations. The reason is that if such an approach is known to be the established policy, and a given wage and price reduction has only small effects, expectations of further wage and price cuts will be widespread. The net effect will then be a *fall* in investment, consumption, and employment—all in anticipation of further cuts in wages and prices. In addition, the uncertainty factor is likely to be increased in importance by a policy which causes frequent price changes, that is, changes from levels to which businessmen have grown accustomed. Such changes make cost and price calculations more difficult, adding to the uncertainty that surrounds all attempts to plan.

*Wage Increases in Depressions*

In recent years, proposals have come forth, largely from trade union sources, for raising wages during depressions, as a means of stimulating the economy out of the doldrums. Analytically, the reasoning on which these proposals are based is akin to that developed in opposition to general wage reductions. Thus it is held that general wage increases will effect a redistribution of income in favor of wage groups, causing the propensity to consume to rise.

The reasons for doubting the efficacy of such a policy are much the same for opposing a policy of wage reductions. In addition to raising consumer demand, wage increases will raise costs. They will also tend to eat into cash balances and other forms of liquid assets of business units. As a result, there is a strong likelihood of an offsetting drop in investment by business. At the same time, there is no guarantee that higher wages will not result in a large increase in precautionary cash balances of workers during uncertain depression periods, with the result that the propensity to consume will rise much less than expected.

In short, there is no more reason to expect *net* expansionary effects from wage increases during depressions, than there is from wage reductions. Some sort of a case might be made out, however, for a policy of wage increases accompanied by a program of *monetary* expansion, to offset some of the damping effects on investment and provide further impetus to consumption. On the other hand, the same policy may be recommended for wage *reductions*. An accompanying expansion of the money supply in this case could be looked for to offset some of the damping effects on consumption and provide an additional boost both to the consumption function and investment. In view of the wholesale uncertainty characterizing wage changes in *either* direction, a policy of wage rigidity has much to commend it.

At the risk of wearisome repetition, we should like to point out once again that the major effects sought from wage and price changes are to be found in monetary and fiscal policy. To the extent that it is thought desirable to build up the liquidity of the economy, to stimulate either investment or the propensity to con-

sume through lower interest rates or through increased liquidity, monetary policy is decidedly the instrument to be recommended. It will accomplish at least the immediate objectives of increased liquidity without inviting the political and social unrest that inheres in a policy of wage reductions. If it is desired to increase consumption through an increase in wage *incomes*, a program of fiscal policy embodying government spending and the like has much more to recommend it than one of wage increases, for it is much less likely to act as a damper on investment at the same time.

There is some basis in experience for objecting to a program of wage cuts during depressions. In so far as their objective is stimulation through increased liquidity, the futility of monetary policy during the depression of the thirties speaks out in testimony of the feeble results of this approach. Moreover, in Sweden during the Great Depression a policy was followed of maintaining wage rates. In sharp contrast, the United States pursued a policy of drastic wage reductions after the depression had got under way. Yet Sweden made a rather rapid recovery from its slump, while the United States continued depressed during the major portions of the decade. Of course, such evidence is very inconclusive, because of the vast amount of other variables that have been left unexplained, but it is suggestive.

### *Wage and Price Policy and Full Employment*

One of the great dilemmas that confront a policy of maintaining full, or near-full, employment in an era of strong trade unions and widespread monopoly elements is the problem of full employment free of strong inflationary pressures. These pressures tend to develop in the form of wage-price spirals. Thus if the government undertakes to guarantee full employment, trade unions are in a position to demand higher wages and oligopolistic producers to raise prices, both without the fear of unemployment or the loss of markets. For if either of these effects threatens to occur and result in lower employment, the government must expand the money supply to forestall this development.

The possibility of economic instability emanating from wage-price spirals is no less a threat to the stability of our political and

social institutions than the threat of prolonged and widespread unemployment. A spiral of inflation threatens to wipe out all fixed income groups, who cannot be expected to view such developments with indifference. The alternative of price controls is not particularly feasible, either, at least within the framework of a free enterprise, peacetime economy. The problem of black markets, the problem of ascertaining appropriate profit margins, and the possibility of crippling business confidence and enterprise spirit, all pose virtually insuperable obstacles in a setting of capitalistic institutions. Attempts to solve the problem by compulsory arbitration do not offer much hope on the American labor scene, either. Neither are efforts to regulate labor unions outright or break them altogether likely to be successful within the framework of a free democracy. The problem, to say the least, is very formidable.

In the end, the solution to it within a framework of capitalism and democracy probably lies in education. It is important to impress upon labor leaders and the rank and file, in those areas where unions have long been organized, the importance of confining demands for high wages to rates that correspond to the annual increases in productivity.<sup>32</sup> That such an approach to the wage-price problem is not beyond successful achievement may be seen in the wage contract of 1950 in the automobile industry between the United Automobile Workers and the General Motors Corporation. Furthermore, the evidence is strong that once unions become firmly established, they lose much of their original militancy and, therefore, may become amenable to suggestions like the one just offered.<sup>33</sup> Once the strong unions are persuaded of the propriety

<sup>32</sup> So that all groups might benefit from advances in productivity, a policy of reliance on price reductions in response to technological advances would be preferable. In view of the widespread monopolistic elements that prevail in our economy, such price reductions do not appear to be feasible. The profit inflation of the twenties in the face of falling costs and constant prices offers some testimony in support of this belief.

<sup>33</sup> The problem of wage-price spirals, which has concerned writers far and wide, makes the present writer wonder whether wage flexibility is truly desired by some of its most ardent exponents. Many of these same people decry most loudly the inflation-pressure created by demands for higher wages in times of full employment. Yet it must be remembered that a true policy of wage flexibility implies not only wage cuts in depressions but wage increases in periods of prosperity and full employment. One cannot help getting the im-

of such policy, the problem of keeping oligopolistic producers from unduly raising prices should be easier. Failure of the latter to co-operate in a desirable manner would undoubtedly foment very unstable labor relations, something all producers (including the large ones) fear. Prolonged strikes pose a dire threat to profit positions. With newer and younger labor and business leaders, educated to the magnitude of the wage-price problem, coming on to the scene, this type of thinking may not be overly optimistic. For the sake of our democratic institutions, let us hope so.

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pression that many of the exponents of wage flexibility are merely interested in flexibility *downwards*, a policy that means virtually breaking the unions. Needless to say, such a policy is not desirable, in the opinion of the present writer, and even less possible of achievement without giving up our democratic institutions.



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